

L4 ANSWER 15 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A method is provided for enhancing the solv. of an ionizable compd. in a lipophilic medium by admixing the compd. with an effective solv.-enhancing amt. of an N,N-dinitramide salt. The ionizable compd., upon ionization, gives rise to a biol. active cationic species that ionically assocs. with the N,N-dinitramide anion N(NO₂)₂ following admixt. with the N,N-dinitramide salt. The biol. active cationic species may be a pharmacol. active cation, in which case the method is useful for enhancing the penetration of the blood-brain barrier by the pharmacol. active cation. In other embodiments, the ionizable compds. are medical imaging or diagnostic agents, or agricultural agents such as pesticides. Salts of biol. active cations and N,N-dinitramide ion are also provided as novel compns. of matter.

ACCESSION NUMBER: 2003:58011 CAPLUS

DOCUMENT NUMBER: 138:126950

TITLE: N,n-dinitramide salts as solubilizing agents for biologically active agents

INVENTOR(S): Bottaro, Jeffrey C.; Petrie, Mark A.; Penwell, Paul E.; Bomberger, David C.

PATENT ASSIGNEE(S): SRI International, USA

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003006371	A1	20030123	WO 2002-US21802	20020709
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 2003026850	A1	20030206	US 2001-905577	20010713
PRIORITY APPLN. INFO.:			US 2001-905577	A 20010713
REFERENCE COUNT:	4		THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT	

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NEWS 16 May 05 Pharmacokinetic information and systematic chemical names added to PHAR
NEWS 17 May 15 MEDLINE file segment of TOXCENTER reloaded
NEWS 18 May 15 Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 19 May 19 Simultaneous left and right truncation added to WSCA
NEWS 20 May 19 RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS 21 Jun 06 Simultaneous left and right truncation added to CBNB
NEWS 22 Jun 06 PASCAL enhanced with additional data
NEWS 23 Jun 20 2003 edition of the FSTA Thesaurus is now available
NEWS 24 Jun 25 HSDB has been reloaded
NEWS 25 Jul 16 Data from 1960-1976 added to RDISCLOSURE
NEWS 26 Jul 21 Identification of STN records implemented
NEWS 27 Jul 21 Polymer class term count added to REGISTRY
NEWS 28 Jul 22 INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS 29 AUG 05 New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS 30 AUG 13 Field Availability (/FA) field enhanced in BEILSTEIN
NEWS 31 AUG 15 PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS 32 AUG 15 PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33 AUG 15 RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34 AUG 15 TEMA: one FREE connect hour, per account, in September 2003
NEWS 35 AUG 18 Data available for download as a PDF in RDISCLOSURE
NEWS 36 AUG 18 Simultaneous left and right truncation added to PASCAL
NEWS 37 AUG 18 FROSTI and KOSMET enhanced with Simultaneous Left and Right Truncation
NEWS 38 AUG 18 Simultaneous left and right truncation added to ANABSTR

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DICTIONARY FILE UPDATES: 9 SEP 2003 HIGHEST RN 582289-61-0

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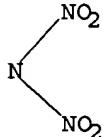
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FILE LAST UPDATED: 10 Sep 2003 (20030910/ED)

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=> s 13
L4 415 L3

=> d 14 1-415 abs ibib

L4 ANSWER 1 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The invention relates to manuf. of ammonium dinitramide (ADN) particles contg. fine additives esp. stabilizers, combustion-modifying agents, and/or energy carrier. Manuf. of said ADN results by (1) migration of additives in the ADN particles by dispersing the additives in a matrix liq. in which the additives and ADN particles are sparingly sol., (2) heating the dispersion at a temp. above the melting temp. of ADN, (3) addn. of ADN followed by emulsification of the melted ADN and contacting with solid additives, (4) cooling at a temp. under melting temp. of ADN, and (5) sepg. ADN with the integrated additives from the matrix liq. ADN is esp useful as an oxidizer for propellants and as an explosive.

ACCESSION NUMBER: 2003:589501 CAPLUS

DOCUMENT NUMBER: 139:119441

TITLE: Manufacture of stabilized and modified ammonium dinitramide

INVENTOR(S): Heintz, Thomas; Krause, Horst; Teipel, Ulrich

PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten

Forschung E.V., Germany

Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1331213	A2	20030730	EP 2002-27258	20021206
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
DE 10201937	A1	20030807	DE 2002-10201937	20020119
PRIORITY APPLN. INFO.:		DE 2002-10201937 A 20020119		

L4 ANSWER 2 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The invention relates to decomposable solid compns. generating H₂ according to a self-sustained combustion reaction after initiation of the reaction with a suitable heat source. The compns. include a complex-borane made up of B, H, and N and an ammonium salt of general formula NH₄Y (Y represents a grouping only made up of N and O such as nitrate or dinitramide). The compns. contain >90 wt.% (complex borane + NH₄Y). The complex borane/NH₄Y wt. ratio is (1-10):1. The compns. are stable at the ambient temp. and provide 13-18% H₂. The arrangement permits to decrease the size and the wt. of the H₂ generators used in certain systems, in particular in the fuel cells with proton-exchanging membranes.

ACCESSION NUMBER: 2003:554034 CAPLUS

DOCUMENT NUMBER: 139:119337

TITLE: Solid compositions for combustion generation of hydrogen comprising a complex borane and an ammonium salt

INVENTOR(S): Perut, Christian; Gauthier, Corinne

PATENT ASSIGNEE(S): SNPE, Fr.

SOURCE: Fr. Demande, 19 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2834710	A1	20030718	FR 2002-322	20020111
PRIORITY APPLN. INFO.:		FR 2002-322 20020111		
REFERENCE COUNT:		5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		

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L4 ANSWER 3 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB The thermal behavior in air of two Al nanopowders, Aliss and Alastaf, a Teflon coated version of Aliss, was detd. by using DSC, TG-DTA, and accelerating rate calorimetry (ARC). Compared to two larger Al nanopowders, for which hazards results were reported, Aliss and Alastaf

are less reactive in air, possibly due to the nature of the passivating and coating layers. The stability of Aliss and Alastaf in a wet environment was also investigated by using ARC. Aliss is very reactive with water, which could lead to a problem of aging in a humid atm. The "coating" of Alastaf significantly reduces the reactivity of Aliss with water. Outgassing behavior of mixts. of ADN and various Al powders was investigated using TG-DTA-FTIR-MS. No chem. interactions were obstd. between ADN/Al, GAP/Al and ADN/GAP. The effect of the addn. of Al nanopowders on the thermal decompn. of ADN and GAP was studied using ARC. Al nanopowders had a minor effect on the thermal stability of ADN, while the addn. of Aliss and Alastaf lowered the onset temp. of GAP. The electrostatic discharge (ESD), impact and friction sensitivities of Al nanopowders and their mixts. with ADN and GAP were also detd. Al nanopowders appear to sensitize ADN to ESD, impact and friction.

ACCESSION NUMBER: 2003:552177 CAPLUS

DOCUMENT NUMBER: 139:119421

TITLE: Hazard characterization of aluminum nanopowder compositions

AUTHOR(S): Jones, David E. G.; Turcotte, Richard; Fouchard, Robert C.; Kwok, Queenie S. M.; Turcotte, Anne-Marie; Abdel-Qader, Zainab

CORPORATE SOURCE: Canadian Explosives Research Laboratory, Ottawa, ON, K1A 0G1, Can.

SOURCE: Propellants, Explosives, Pyrotechnics (2003), 28(3), 120-131

CODEN: PEPYD5; ISSN: 0721-3115

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 4 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A procedure is disclosed for prodn. of a gelled propellant from liq. fuels, propellants, and/or explosives or solid fuels, propellants, and/or explosives dissolved in org. solvents. The solids 1-800 nm diam. (preferably 10-300 nm diam.) are homogeneously dispersed in the liq. by using stirrers or ultrasound. The amt. of the solid particles is 0.5-25 wt.%. On the basis of the structure viscosity, the propellant is easily handled in the viscose state and can be satisfactorily atomized and burned

in a controllable way after conversion to the liq. state.

ACCESSION NUMBER: 2003:548634 CAPLUS

DOCUMENT NUMBER: 139:54952

TITLE: Gelled propellant, its production, and use

INVENTOR(S): Teipel, Ulrich; Foerster-Barth, Ulrich; Krause, Horst

PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft Zur Foerderung Der

Angewandten

Forschung E.V., Germany

Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1321505	A2	20030625	EP 2002-27115	20021204
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
DE 10163978	A1	20030710	DE 2001-10163978	20011222
NO 2002006128	A	20030623	NO 2002-6128	20021219
PRIORITY APPLN. INFO.:		DE 2001-10163978 A 20011222		

L4 ANSWER 5 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review of combustion characteristics and mechanism of ammonium dinitramide (ADN). The relations between burning rate and pressure of ADN were introduced with description of combustion phenomena under different pressures. The exptl. temp. profiles in combustion wave of ADN were collected. Initial thermal decompn. reactions and dark-zone formation mechanisms in ADN combustion were discussed together with the author's anal.
 ACCESSION NUMBER: 2003:393521 CAPLUS
 DOCUMENT NUMBER: 139:38683
 TITLE: Combustion characteristics and mechanisms of ammonium dinitramide
 AUTHOR(S): Yang, Rong-jie
 CORPORATE SOURCE: Beijing Inst. of Technology, Coll. of Materials Science and Engineering, Beijing, 100081, Peop. Rep. China
 SOURCE: Tujin Jishu (2003), 24(2), 97-103
 CODEN: TUJIEG; ISSN: 1001-4055
 PUBLISHER: Tujin Jishu Bianjibu
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Chinese

L4 ANSWER 6 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Gas generant formulations contg. guanidine dinitramide (I) generate substantially entirely 100% water-insol. particulates when combusted. In preferred forms, the gas-generant formulations comprise I as a fuel component and an alk. earth metal nitrate (e.g., strontium nitrate) as an oxidizer component. Low toxicity, high-purity strontium nitrate with a low barium content is esp. preferred as an oxidizer.
 ACCESSION NUMBER: 2003:356413 CAPLUS
 DOCUMENT NUMBER: 138:371197
 TITLE: Gas-generant formulations containing guanidine dinitramide and Group IIA nitrate oxidizers and inflatable devices employing these propellants
 INVENTOR(S): Lundstrom, Norman H.; Scheffee, Robert S.; Lynch, Robert D.; Neidert, Jamie B.
 PATENT ASSIGNEE(S): Atlantic Research Corporation, USA
 SOURCE: PCT Int. Appl., 12 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

 PATENT NO. KIND DATE APPLICATION NO. DATE
 WO 2003037859 A2 20030508 WO 2002-US33886 20021024
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 PRIORITY APPLN. INFO.: US 2001-330793P P 20011031

L4 ANSWER 7 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Recent work performed at DERA (now QinetiQ) has shown how accelerating rate calorimetry (ARC) can be used to obtain time to max. rate curves by using larger samples of energetic materials. The use of larger samples reduces the effect of thermal inertia, permitting exptl. data to be gathered at temps. closer to those likely to be encountered during manuf., transportation or storage of an explosive device. However, in many cases, extrapolation of the time to max. rate curve will still be necessary. Because of its low detection limit compared to the ARC, heat conduction calorimetry can be used to obtain data points at, or below, the region where an explosive system might exceed its temp. of no return and undergo a thermal explosion. Paired ARC and heat conduction calorimetry expts. were conducted on some energetic material samples to explore this possibility further. Examples of where both agreement and disagreement are found between the two techniques are reported and the significance of these discussed. Ways in which combining ARC and heat conduction calorimetry expts. can enhance, complement and validate the results obtained from each technique are exmd.
 ACCESSION NUMBER: 2003:324633 CAPLUS
 TITLE: Combined use of adiabatic calorimetry and heat conduction calorimetry for quantifying propellant cook-off hazards
 AUTHOR(S): Bunyan, P. F.; Griffiths, T. T.; Norris, V. J.
 CORPORATE SOURCE: QinetiQ, Centre for Environmental Technology, Kent, TN14 7BP, UK
 SOURCE: Thermochimica Acta (2003), 401(1), 17-25
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB This paper is devoted to the investigation of main characteristics and mechanism of combustion of the composite solid-rocket pseudopropellant based on ammonium dinitramide and polycaprolactone. Exptl. data on the dependence of the burning rate on pressure in the pressure range of 4-8 MPa for ammonium dinitramide/polycaprolactone propellant with different additives and with polycaprolactone of different mol. wt. are presented in the paper. The dependence of propellant burning rate on particle size of oxidizer and initial temp. has been also investigated. Comprn. of the combustion products of the propellant at pressures of 4 MPa using two different systems of sampling is detd. The temp. profile in the combustion wave of some propellants is obtained with aid of thin flat thermocouples. Temp. of the final combustion products of the propellant without additive and for some propellants with additive is detd. by a thermocouple method. Also the effect of a CuO catalyst on temp. profile is investigated. Flame structure of ammonium dinitramide/polycaprolactone propellant at 0.1 MPa is studied. Data obtained elucidating combustion mechanism and place of action of catalyst are discussed.
 ACCESSION NUMBER: 2003:265237 CAPLUS
 DOCUMENT NUMBER: 139:71136
 TITLE: Study of combustion characteristics of ammonium dinitramide/polycaprolactone propellants
 AUTHOR(S): Korobkinichhev, Oleg P.; Paletsky, Alexander A.; Tereschenko, Alexander G.; Volkov, Evgeny N.
 CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, 630090, Russia
 SOURCE: Journal of Propulsion and Power (2003), 19(2), 203-212
 CODEN: JPOPEL; ISSN: 0748-4658
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 9 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A min. signature solid propellant, with reduced emissions of halogen-contg. exhaust gases, contain a polymeric binder, 6.0-9.0, a halogen-free energetic plasticizer 21-25, and ammonium dinitramide oxidizer, with particle size 20-60 .mu.m 55-65 wt%. An addnl. oxidant may be Cl-20. Suitable binders are polycaprolactone, polyglycidyl nitrate, and ORP-2A (energetic polyester); suitable plasticizers include butanetriol trinitrate (BTTN), trimethylolethane trinitrate (TMETN), and N-n-butyl-N-(2-nitroxyethyl)nitramine (BuNENA). Other components include an isocyanate crosslinking agent, a crosslinking catalyst, a stabilizer,

a burn rate modifier, and a bonding agent. The exhaust gases of these novel propellants consist mostly of CO₂, H₂O, N₂, and small amts. of CO.
 ACCESSION NUMBER: 2003:203040 CAPLUS
 DOCUMENT NUMBER: 138:223716
 TITLE: Halogen-free minimum-signature composite solid propellant containing energetic binders and plasticizers
 INVENTOR(S): Chan, May L.; Turner, Alan D.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 17 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003047260	A1	20030313	US 2001-820374	20010326
			US 2001-820374	20010326

PRIORITY APPLN. INFO.:

L4 ANSWER 10 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Investigations on the adsorption of ammonium dinitramide (NH₄N(NO₂)₂) (ADN) from aq. solns. on powd. activated charcoal (PAC) were carried out to find out an effective and easier method of sepg. ADN from aq. solns. The effectiveness of PAC in the selective adsorption of ADN from aq. solns. of ADN (ADN-F) and ADN in presence of SO₄²⁻ and NO₃⁻ (ADN-PS) was exmd. and compared using batch and column methods. The adsorption process follows both Langmuir and Freundlich adsorption isotherms and the isotherm parameters for the models were detd. The obsd. data favor the formation of monolayer adsorption. The adsorption capacities were found to be 63.3, 119, 105.3, and 82 mg of ADN per g of PAC for ADN-F (batch), ADN-PS (batch), ADN-F (column), and ADN-PS (column), resp. Break-through curves for ADN-F and ADN-PS were obtained for the optimization of sepn.

of ADN from aq. solns. Elution curves were generated for the desorption of ADN from PAC using hot water as eluent.
 ACCESSION NUMBER: 2003:176032 CAPLUS
 DOCUMENT NUMBER: 138:358811
 TITLE: Adsorption of ammonium dinitramide (ADN) from aqueous solutions I. Adsorption on powdered activated charcoal
 AUTHOR(S): Santhosh, G.; Venkatachalam, S.; Ninan, K. N.; Sadhana, R.; Alwan, S.; Abarna, V.; Joseph, M. A.
 CORPORATE SOURCE: Propellants and Special Chemicals Group, Vikram Sarabhai Space Centre, Trivandrum, 695022, India
 SOURCE: Journal of Hazardous Materials (2003), 98(1-3), 117-126
 CODEN: JHWAQ9; ISSN: 0304-3894
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 11 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Supercrit. carbon dioxide (scCO₂) polymer coating techniques were used for coating of various propellant, explosive, and pyrotechnic (PEP) ingredients. Ammonium dinitramide (ADN), 2,4,6,8,10,12-hexanitrohexaazaisowurtzitane (CL-20), cyclotrimethylenetrinitramine (RDX), and the ballistic modifiers for AA-7 lead free propellant were polymer coated to reduce sensitivity, improve moisture resistance, and improve chem. compatibility with other ingredients. Carbon dioxide (CO₂) has modest crit. properties (T_c = 31.degree., P_c = 73.8 bar [1071 psi]) and is non-toxic, non-corrosive, and low-cost. CO₂ is an environmentally acceptable solvent for polymer coating applications. It has proven to be a very good solvent for a variety of polymer and copolymers. Coating of ADN and CL-20 reduced their friction and electrostatic discharge (ESD) sensitivity. The AA-7 lead-free propellant uses bismuth subsalicylate (BSS), 1.5%; copper salicylate (CUS), 1.0%; copper stannate (CUST), 0.77%; and carbon black, 0.1% as the ballistic modifier. The CUS caused stabilizer depletion due to the catalysis of the nitroglycerin (NG). The combination of Cus and BSS has only one half the depletion rate of the copper compd. alone. An unexpected result was obtained with the coated ballistic modifier, the redn. of stability by the combination of the two (copper and bismuth) was eliminated.

ACCESSION NUMBER: 2003:127853 CAPLUS
 DOCUMENT NUMBER: 138:371129
 TITLE: Coating of pep ingredients using supercritical carbon dioxide
 AUTHOR(S): Nauflett, George W.; Farncomb, Robert E.
 CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
 SOURCE: CPIA Publication (2002), 70919th JANNAF Safety and Environmental Protection Subcommittee Meeting, 2002, Volume 1, 13-19
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 12 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Propellants which avoid the formation of HCl as a combustion product are formulated without halogen-based oxidizers. These propellants, which uses

ammonium dinitramide as the primary oxidizer, are composed of an energetic binder 5.0-10.0, an energetic plasticizer 20.0-35.0, ammonium dinitramide 25.0-45.0, and powd. Al (with particle size 1-60 .mu.m, esp. ultrafine Al with particle size <1 .mu.m) 0-20.0 wt%. The formulations may also contain curing and crosslinking catalysts and agents, burn rate catalysts and modifiers, thermal and aging stabilizers, binders, opacifiers, etc.

ACCESSION NUMBER: 2003:97674 CAPLUS
 DOCUMENT NUMBER: 138:155874
 TITLE: High-energy propellant with reduced hydrogen chloride pollution containing ammonium dinitramide oxidizer and

energetic binders and plasticizers
 INVENTOR(S): Reed, Russell, Jr.; Ciaramitaro, David A.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003024617	A1	20030206	US 2001-872427	20010529
US 6613168	B2	20030902		

PRIORITY APPLN. INFO.: US 2001-872427 20010529

L4 ANSWER 13 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A gas generating material for a vehicle occupant protection device (e.g., an airbag) consists of 45 wt.% hydroxylammonium 3-nitramino-4-nitrofurazan, 2.5-10 wt.% binders, and enough oxidizer to ensure complete combustion. Suitable binders include cellulose-based binders, polycarbonates, polyurethanes, polyesters, polyethers, polysuccinates, thermoplastic rubber, polybutadiene, polyolefins, polystyrene, ethylene-butene-styrene block copolymer, and cellulose acetate butyrate. Suitable oxidizers are alkali and alk. earth metal nitrates, perchlorates, and chlorates, as well as ammonium perchlorate and ammonium nitrate.

ACCESSION NUMBER: 2003:89674 CAPLUS

DOCUMENT NUMBER: 138:139660

TITLE: (Nitramino)nitrofurazan-based monopropellant smokeless

INVENTOR(S): gas generating compositions, especially for airbags Blomquist, Harold R.

PATENT ASSIGNEE(S): TRW Inc., USA

SOURCE: U.S., 6 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6513834	B1	20030204	US 2000-650935	20000829

PRIORITY APPLN. INFO.: US 2000-650935 20000829

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 14 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Proton transfer in gaseous ammonium dinitramide (ADN) clusters up to (ADN)₂ is studied by using d.-functional theory. Proton transfer between the hydrogen dinitramide and ammonia units does not occur in the ADN monomer, rather the ammonia-hydrogen dinitramide complex is stabilized by strong hydrogen bonding. However, proton transfer between hydrogen dinitramide and ammonia is obes. in the ADN dimer [NH₃HN(NO₂)₂]₂, ADN solvated with a single ammonia mol. [NH₃HN(NO₂)₂]NH₃, and ADN solvated with a hydrogen dinitramide mol. [NH₃HN(NO₂)₂]H₂N[NO₂]₂. Structural changes in the complexes relative to the free mols. and the binding energies of the clusters are given. Using population anal., the total electrostatic interaction energy in each cluster is calcd. The electrostatic energy is a measure that distinguishes between the ionic or hydrogen-bonded nature of the clusters. Some implications of proton transfer in ADN clusters on the decompn. mechanism of ADN are discussed.

ACCESSION NUMBER: 2003:64141 CAPLUS

DOCUMENT NUMBER: 138:260833

TITLE: Proton transfer in gas-phase ammonium dinitramide clusters

AUTHOR(S): Alavi, Saman; Thompson, Donald L.

CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA

SOURCE: Journal of Chemical Physics (2003), 118(6), 2599-2605

CODEN: JCPSA6; ISSN: 0021-9606

American Institute of Physics

PUBLISHER: Journal

DOCUMENT TYPE: English

LANGUAGE: English

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 15 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method is provided for enhancing the solv. of an ionizable compd. in a lipophilic medium by admixing the compd. with an effective

solv.-enhancing

ant. of an N,N-dinitramide salt. The ionizable compd., upon ionization, gives rise to a biol. active cationic species that ionically assoc. with the N,N-dinitramide anion N(NO₂)₂ following admixt. with the N,N-dinitramide salt. The biol. active cationic species may be a pharmacol. active cation, in which case the method is useful for enhancing

the penetration of the blood-brain barrier by the pharmacol. active cation. In other embodiments, the ionizable compds. are medical diagnostics or diagnostic agents, or agricultural agents such as pesticides. Salts

of biol. active cations and N,N-dinitramide ion are also provided as novel compns. of matter.

ACCESSION NUMBER: 2003:58011 CAPLUS

DOCUMENT NUMBER: 138:126950

TITLE: N,n-dinitramide salts as solubilizing agents for biologically active agents

INVENTOR(S): Bottaro, Jeffrey C.; Petrie, Mark A.; Penwell, Paul E.; Bomberger, David C.

PATENT ASSIGNEE(S): SRI International, USA

SOURCE: PCT Int. Appl., 41 pp.

CODEN: PIXX02

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

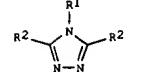
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003006371	A1	20030123	WO 2002-US21802	20020709
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003026850	A1	20030206	US 2001-905577	20010713

PRIORITY APPLN. INFO.: US 2001-905577 A 20010713

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 16 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 GI



AB Novel energetic salts of 1H-1,2,4-triazole have a general formula I, in which R2 and R1 are H or NH₂, with the proviso that when R1 = H, R2 = H; X = NO₃⁻, ClO₄⁻, and N(NO₂)₂⁻. The salts (which are insensitive and have use as gas-generating compns. and as propellant components) are prep'd. in high yield in com. polar solvents at ambient temps. by reaction of the substituted 1H-1,2,4-triazole with the corresponding acid.

ACCESSION NUMBER: 2003:53546 CAPLUS

DOCUMENT NUMBER: 138:92350

TITLE: Novel energetic salts of 1,2,4-triazoles and aminotriazoles as candidate insensitive propellants and gas generators

INVENTOR(S): Drake, Greg W.

PATENT ASSIGNEE(S): United States Dept. of the Air Force, USA

SOURCE: U.S., 6 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6509473	B1	20030121	US 2000-688909	200001016

PRIORITY APPLN. INFO.: US 2000-688909 200001016

OTHER SOURCE(S): MARPAT 138:92350

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 17 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB This paper presents a progress report on studies being made to characterize new, high burning rate materials being considered as potential solid propellant ingredients. The effect of synthesis procedure on the burning rate and burning rate pressure exponent is illustrated for the high nitrogen contg. compd. 3,6-bis(1H-1,2,3,4-tetrazol-5-amino)-2-tetrazine (BTATZ). It appears that the use of DMF in the final synthetic step not only results in higher burning rate materials, but also reduced burning rate pressure exponents. The effect of BTATZ on ammonium dinitramide (ADN) burning rate is illustrated. Burning rates of hydrazinium nitroformate (HNF) obtained from two sources were very comparable. The BTATZ, di-amino-azo-tetrazine (DAAT) N-oxides and HNF are compared to neat burning rate data of more familiar compds. of ADN, hexanitrohexaazaisowurtzitane (CL-20), and cyclotetramethylenetrinitramine (HMN).

ACCESSION NUMBER: 2003:37485 CAPLUS
DOCUMENT NUMBER: 138:340443
TITLE: Window bomb burning rates of BTATZ, DAAT, and HNF
AUTHOR(S): Atwood, A. I.; Bui, D. T.; Curran, P. O.; Ciaramitaro, D. A.; Lee, K. B.
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, 93555, USA
SOURCE: CPFA Publication (2002), 712(38th JANNAF Combustion Subcommittee Meeting, 2002), 119-127
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 18 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Supercrit. carbon dioxide (scCO₂) polymer coating techniques were used for coating of various propellant, explosive, and pyrotechnic (PEP) ingredients. Ammonium dinitramide (ADN), 2,4,6,8,10,12-hexanitrohexaazaisowurtzitane (CL-20), cyclotrimethylenetrinitramine (RDX), and the ballistic modifiers for AA-7 lead free propellant were polymer coated to reduce sensitivity, improve moisture resistance, and improve chem. compatibility with other ingredients. Carbon dioxide (CO₂) has modest crit. properties ($T_c = 31$ degree., $P_c = 73.8$ bar [1071 psi]) and is non-toxic, non-corrosive, and low-cost. CO₂ is an environmentally acceptable solvent for polymer coating applications. It has proven to be a very good solvent for variety of polymer and copolymers. Coating of ADN and CL-20 reduced their friction and electrostatic discharge (ESD) sensitivity. The AA-7 lead-free propellant uses bismuth subsalicylate (BiS), 1.5%; copper salicylate (CuS), 1.0%; copper stannate (CuSt), 0.77%; and carbon black, 0.1% as the ballistic modifier. The CuS caused stabilizer depletion due to the catalysis of the nitroglycerin (NG). The combination of CuS and BiS has only one half the depletion rate of the copper compd. alone. An unexpected result was obtained with the coated ballistic modifier, the redn. of a stability by the combination of the two

(copper and bismuth) was eliminated.
ACCESSION NUMBER: 2003:27206 CAPLUS
DOCUMENT NUMBER: 138:340430
TITLE: Coating of pep ingredients using supercritical carbon dioxide
AUTHOR(S): Nauflett, George W.; Farncomb, Robert E.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPFA Publication (2002), 708(JANNAF 30th Propellant Development & Characterization Subcommittee Meeting, 2002), 13-19
CODEN: CPPUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 19 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Urotropinium nitrate, N-methylurotropinium azide, dinitramide and azotetrazolate salts were prep'd. and fully characterized by anal. and spectroscopic (1H, 13C, 14N NMR, IR, Raman) methods. The structures of all four compds. were detd. using X-ray diffraction techniques and represent new examples of the class of high energy d. materials.
ACCESSION NUMBER: 2003:20450 CAPLUS
DOCUMENT NUMBER: 138:353951
TITLE: Synthesis, characterization, and crystal structures of various energetic urotropinium salts with azide, nitrate, dinitramide and azotetrazolate counter ions
AUTHOR(S): Ang, How-Ghee; Fraenck, Wolfgang; Karaghiosoff, Konstantin; Klapotke, Thomas M.; Noth, Heinrich; Sprott, Joanne; Suter, Max; Vogt, Martin; Warchhold, Marcus
CORPORATE SOURCE: Chemistry Department, National University of Singapore, Singapore, Singapore
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(13), 2901-2906
CODEN: ZAACAB; ISSN: 0044-2313
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 138:353951
REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 20 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The literature-known, but not fully characterized, silver dinitramide transfer reagents Ag[NO₂]₂ (1), [Ag(NCCH₃)][N(NO₂)₂] (2), and [Ag(py)₂][N(NO₂)₂] (3) were prep'd. and studied by ¹⁰⁹Ag, ¹⁴N NMR and vibrational spectroscopy (IR, Raman). The poorly understood [Cu(NH₃)₄][N(NO₂)₂]₂ (4) and [Pd(NH₃)₄][N(NO₂)₂]₂ (5) also were prep'd. and characterized by ¹⁴N NMR and vibrational spectroscopy (IR, Raman). The structures of 2-5 also were detd. by X-ray diffraction.
ACCESSION NUMBER: 2003:20449 CAPLUS
DOCUMENT NUMBER: 138:313333
TITLE: Synthesis, characterization, and crystal structures of Cu, Ag, and Pd dinitramide salts
AUTHOR(S): Ang, How-Ghee; Fraenck, Wolfgang; Karaghiosoff, Konstantin; Klapotke, Thomas M.; Mayer, Peter; Noth, Heinrich; Sprott, Joanne; Warchhold, Marcus
CORPORATE SOURCE: Chemistry Department, National University of Singapore, Singapore, Singapore
SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(13), 2894-2900
CODEN: ZAACAB; ISSN: 0044-2313
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 21 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Combustion stabilizers for ammonium dinitramide-based liq. monopropellants contain 0.1-5 wt.% ammonia, a base weaker than ammonia, or a sterically hindered base, selected from hydrazine, hydroxylamine, urea, allantoin, pyridine and methylpyridines, and pyridinamines, aryl amines, and hexamethylenetetramine. In addn. to ammonium dinitramide, the liq. monopropellants contain water and a fuel, selected from org. compds. (preferably methanol, glycine, and glycols).

ACCESSION NUMBER: 2002:927368 CAPLUS
 DOCUMENT NUMBER: 138:15045.
 TITLE: Amines as combustion stabilizers for ammonium dinitramide-based liquid single-base propellants
 INVENTOR(S): Anflo, Kjell; Wingborg, Niklas
 PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
 SOURCE: PCT Int. Appl., 18 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002096832	A1	20021205	WO 2002-SE988	20020523
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		RW:	GH, GM, KE, LS, MW, MZ, SD, SL, S2, T2, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:	SE 2001-1751	A	20010528	
REFERENCE COUNT:	5	THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT				

PRIORITY APPLN. INFO.: SE 2001-1751 A 20010528
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 22 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of two amine base salts of dinitramide, the guanidinium (I) and the hydroxyguanidinium (II), were detd. I crystallizes in the triclinic space group P(1) with cell dimensions $a = 8.325(2)$.ANG., $\beta = 9.301(2)$.ANG., $c = 9.869(2)$.ANG., $\alpha = 84.73(3)$.degree., $\beta = 69.25(3)$, $\gamma = 67.55(3)$, while 2 crystallizes in the noncentric monoclinic space group P_c with cell dimensions $a = 7.098$ (2) .ANG., $b = 3.5160$ (10), $c = 14.358(3)$.ANG., $\beta = 98.940(10)$. The structures of I and II contain protonated amine cations and dinitramide anions linked by hydrogen bonding. In both structures the conformations adopted by the dinitramide anions can be related to the types of hydrogen bonds it forms with the surrounding amine cations.

ACCESSION NUMBER: 2002:880662 CAPLUS
 DOCUMENT NUMBER: 138:207295
 TITLE: A new class of flexible energetic salts. Part 7: The structures of the guanidinium and hydroxyguanidinium salts of dinitramide

AUTHOR(S): Gilardi, Richard; Butcher, Ray J.
 CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
 SOURCE: Laboratory, Washington, DC, 20375, USA
 JOURNAL: Journal of Chemical Crystallography (2002), 32(11), 477-484
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 22 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A decompr. reactor for liq. ammonium dinitramide-based rocket monopropellants includes a sintering-resistant, high-temp.-stable thermal decompr. catalyst. The reactor consists of a hollow body provided with, from the upstream end, an injector, a heated bed, and a catalyst bed of porous catalyst particles (heat resistant to >1000.degree., preferably >1400.degree.) comprised of a metal hexaaluminate of formula $MA111018$ (M is an alk. earth or rare earth metal, preferably La). The hexaaluminate (as catalyst supports) are prep. by combined sol-gel and microemulsion techniques, by adding a soln. of an Al alkoxide to a water-in-oil microemulsion contg. a water-sol. salt of M to form a powd. product that is recovered and calcined. Suitable supported thermal decompr. catalysts include Pt, Ru, Pd, Pt/Rh, Ir, Rh, Mn, or Ir/Rh. Typical ammonium nitramide-based monopropellants consist of apprx. 65 wt.% ADN, apprx. 25 wt.% water, and apprx. 10 wt.% MeOH (as added fuel), and include a small amt. (0.5 wt.%) of a weak base stabilizer (urea and hexamine).

ACCESSION NUMBER: 2002:906623 CAPLUS
 DOCUMENT NUMBER: 137:386708
 TITLE: Reactor and hexaaluminate-based catalysts for thermal decomposition of ammonium dinitramide single-base monopropellants
 INVENTOR(S): Greenland, Tor-Arne; Westerberg, Bjoern; Bergman, Goeran; Anflo, Kjell; Brandt, Jesper; Lyckfeldt, Ola; Agrell, Johan; Ersson, Anders; Jaeras, Sven; Buotnet, Magali; Wingborg, Niklas
 PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.
 SOURCE: PCT Int. Appl., 47 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002095207	A1	20021128	WO 2002-SE992	20020523
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		RW:	GH, GM, KE, LS, MW, MZ, SD, SL, S2, T2, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:	SE 2001-1847	A	20010523	
	SE 2001-1852	A	20010523	
	SE 2001-1751	A	20010528	
REFERENCE COUNT:	1	THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT				

L4 ANSWER 24 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An oxidizer package for a solid propellant-fueled system consists of a solid oxidizer shaped as discrete pellets of a pre-set geometry and arranged in an array with spaces among the pellets and a holder for maintaining the pellets within the array for uptake of a binder within the spaces among the array of pellets. The oxidizer pellets are pressed from an oxidizer, selected from hydroxylammonium nitrate, ammonium perchlorate, ammonium nitrate, hydroxylammonium perchlorate, nitromium perchlorate, hydrazinium nitroformate, and ammonium dinitramide. Suitable binders are selected from thermoplastic polymers, thermosetting polymers, waxes or greases, an energetic polymer, and a polymd. peroxide. Preferred propellants include hydrazinium nitroformate and nitromium perchlorate.

ACCESSION NUMBER: 2002:833169 CAPLUS
 DOCUMENT NUMBER: 137:339659
 TITLE: Package for solid propellant-fueled systems containing
 INVENTOR(S): Cesaroni, Anthony Joseph; Dennett, Michael J.; Louwers, Jeroen
 PATENT ASSIGNEE(S): Cesaroni Technology Incorporated, Can.
 SOURCE: U.S. Pat. Appl. Publ., 14 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2002157557	A1	20021031	US 2002-44747	20020110
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PRIORITY APPLN. INFO.:	US 2001-260750P	P	20010110
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L4 ANSWER 25 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB To measure the solid-propellant combustion temp., a procedure was used based on examm. of the temp. dependence of the Q-branch of the coherent anti-Stokes Raman scattering (CARS) spectrum due to nitrogen contained in combustion products. The measurements were carried out at a pressure of 4 MPa, under which the spectrum demonstrated a substantial overlap between spectral lines. CARS intensities at two frequencies were registered; their ratio was used to det. the combustion temp. of a stoichiometric ammonium dinitramide-polycaprolactone mixt.
 ACCESSION NUMBER: 2002:815343 CAPLUS
 DOCUMENT NUMBER: 138:306209
 TITLE: Measurement of the Combustion Temperature of a Solid Propellant by the CARS Method
 AUTHOR(S): Boyarshinov, B. F.; Fedorov, S. Yu.
 CORPORATE SOURCE: Siberian Division, Kutateladze Institute of Thermal Physics, Russian Academy of Sciences, Novosibirsk, 630090, Russia
 SOURCE: Journal of Applied Mechanics and Technical Physics (Translation of Prikladnaya Mekhanika i Tekhnicheskaya Fizika) (2002), 43(6), 925-930
 PUBLISHER: Kluwer Academic/Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 26 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Perforated solid propellant geometric shapes (e.g., as blocks, sticks, slabs, cylinders, and tubes), with a high charge d. and high progressivity (i.e., an increasingly greater burning area with time) are characterized by a large no. of perforations, densely and evenly distributed over the entire propellant segments, made by perforation dies that are pressed down into the propellant. The perforations are made in a no. of steps with a predetd. step feed between each operation. A perforation device comprises a mobile pin die away from but facing the feed path for the propellant, and contains at least one row of pins for perforation of the propellant. Each row of pins comprises the no. of pins required to cover the complete width of the propellant segment across its direction of advance. Between each perforation operation, the propellant is step fed by a step feed device at a distance equiv. to the distance between two desired perforations multiplied by the no. of rows of pins arranged across the direction of advance of the propellant. In addn., the distance between two burning surfaces of the propellant is equal to double the desired burning length. The propellants are typically conventional single-, double-, or multi-base propellants as well as multi-base propellants based on nitramines, dinitramide, dinitromethane, dinitroethylene, and dinitropyridine.
 ACCESSION NUMBER: 2002:814076 CAPLUS
 DOCUMENT NUMBER: 137:313135
 TITLE: Perforation die pressing for fabrication of perforated solid propellants with high charge density and high progressivity in combustion
 INVENTOR(S): Dahlberg, Johan; Sellin, Lennart
 PATENT ASSIGNEE(S): Nexplo Bofor AB, Swed.
 SOURCE: PCT Int. Appl., 25 pp.
 CODEN: PIXKD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002083602	A1	20021024	WO 2002-SE622	20020328
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, T2, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GR, GN, GQ, GW, ML, MR, NE, SM, TD, TG		
SE 2001001166	A	20021003	SE 2001-1166	20010402
SE 518867	C2	20021203		

 PRIORITY APPLN. INFO.: SE 2001-1166 A 20010402
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 27 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In an effort to increase the performance of solid rocket propellants, new and novel energetic propellant formulations were synthesized and tested. These new propellants were characterized exptl. in order to det. a no. of important ballistic parameters. These parameters include the burning rate characteristics, temp. sensitivity, the Arrhenius form of burning rate law, and the stability behavior in terms of the B. V. Novozhilov (1990) parameters. The samples were tested in an optical strand burner through a broad range of pressures (50 < P < 3,000 psig) and initial temps. (-25 < T < 50.degree.). The burning rate characteristics were detd. through the use of break wires. Propellant burning surface temps. were detd. from the subsurface temp. measurements made by using fine-wire thermocouples. From these measurements, the ballistic parameters mentioned above were deduced. In addn. to the ballistic parameters obtained from strand tests, an instrumented rocket motor was designed and fabricated in order to det. the propulsive behavior of these new propellants. The parameters of interest in these expts. included specific impulse (isp), and C⁴ efficiency. The rocket motor was equipped with two high-frequency pressure transducers, an ultrasonic transducer for measuring propellant grain regression rate, a piezoelec. load cell for measuring thrust, and a real-time X-ray radiog. system for measuring both instantaneous propellant regression rate and instantaneous exit nozzle throat diam. A no. of system checkout tests were successfully conducted, which demonstrated that the motor was fully operational. Furthermore, several motor tests were conducted with the new energetic propellants, results of these tests are discussed in the paper.
 ACCESSION NUMBER: 2002:762029 CAPLUS
 DOCUMENT NUMBER: 138:139623
 TITLE: Characterization of combustion and propulsive behavior of NF2-based solid propellants
 AUTHOR(S): Young, Gregory; Kuo, Kenneth K.
 CORPORATE SOURCE: Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, University Park, PA, 16802, USA
 SOURCE: CPIA Publication (2001), 705(50th JANNAF Propulsion Meeting, 2001, Vol. 1), 287-303
 CODEN: CPPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 28 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Composite propellant formulations contain an oxidizer, a binder, and 3,6-bis[1H-1,2,3,4-tetrazole-5-ylamino]-1,2,4-5-tetrazine (I) and/or I salts (e.g., diammonium, dihydrazinium, and dihydroxylammonium salts). Suitable oxidizers are selected from alkali metal and alk. earth metal nitrates, perchlorates, dinitramide, and chlorates; ammonium dinitramide, ammonium nitrate, hydrazinium perchlorate, hydrazinium chloride, hydrazinium nitrate, hydrazinium dinitramide, and potassium perchlorate. I can be used as a substitute for aluminum in composite HTPB-based (hydroxy-terminated polybutadiene) composite propellants. I was synthesized by nucleophilic substitution of: (1) 3,6-dichloro-1,2,4,5-tetrazine in 1H-1,2,3,4-tetrazole-5-amine, or (2) 3,5-bis(3,5-dimethylpyrazol-1-yl)-s-tetrazine with 1H-1,2,3,4-tetrazole-5-amine.
 ACCESSION NUMBER: 2002:746374 CAPLUS
 DOCUMENT NUMBER: 137:265190
 TITLE: Composite propellants contg. oxidizer, binder, and bis(tetrazolylamino)-s-tetrazine and salts as powd. aluminum substitutes
 INVENTOR(S): Hiskey, Michael A.; Chavez, David E.; Naud, Darren
 PATENT ASSIGNEE(S): The Regents of the University of California, USA
 SOURCE: U.S., 5 pp.
 CODEN: USXKAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6458227	B1	20021001	US 2000-561309	20000428

 PRIORITY APPLN. INFO.: US 2000-561309 20000428
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 29 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A hybrid propulsion system for rockets is composed of a liq. fuel section, consisting of an aq. soln. of H₂O₂ (or a stream of decompd. H₂O₂), and a solid fuel section, in which the H₂O₂-contg. stream is injected onto the solid fuel section at elevated temp., to induce combustion of the fuel grain in the solid fuel section. Other components of the propulsion system include: (1) a decompn. catalyst for H₂O₂, (2) storage stabilizers for the H₂O₂ soln. (e.g., chelating agents), (3) ammonium dinitramide or hydrazinium nitroformate (in the H₂O₂ soln.), (4) solid oxidizers (e.g., chlorate, perchlorate, and nitrate salts), (5) hydrogen-active metals, and (6) energetic fillers (e.g., RDX, HMX, HMN), plasticizers (BTTN, TMETN, etc.), and polymers (GRP, BAMO/AMMO copolymer, etc.). Suitable decompn. catalysts for H₂O₂ are Pt, Ag, Pt- or Ag-coated Ni, MnO₄, or MnO₂.
 ACCESSION NUMBER: 2002:674382 CAPLUS
 DOCUMENT NUMBER: 137:203516
 TITLE: Hydrogen peroxide-based liquid-solid fuel hybrid propellant systems for rockets
 INVENTOR(S): Cesaroni, Anthony J.; Dennett, Michael J.
 PATENT ASSIGNEE(S): Cesaroni Technology Incorporated, Can.
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002121081	A1	20020905	US 2002-44473	20020110
			US 2001-260697P	P 20010110

PRIORITY APPLN. INFO.:

L4 ANSWER 30 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In conventional metathetical reactions, product sepn. is based on solv. product differences, and the resulting products are often impure and require purifn. by recrystn. A new approach to product sepn. is described that relies on the formation of an unstable, volatile byproduct, such as NH₄+CH₃O-. This method provides very pure and anhyd. products in high yield and was demonstrated successfully for the syntheses of anhyd. cesium salts.
 ACCESSION NUMBER: 2002:608529 CAPLUS
 DOCUMENT NUMBER: 137:345085
 TITLE: An improved method for product separation in metathetical reactions and its demonstration for the synthesis of anhydrous cesium salts
 AUTHOR(S): Haiges, Ralf; Christe, Karl O.
 CORPORATE SOURCE: University of Southern California, Los Angeles, CA, USA
 SOURCE: Zeitschrift fuer Anorganische und Allgemeine Chemie (2002), 628(8), 1717-1718
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 31 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The heat of reactions of free dinitramic acid (HN(NO₂)₂) with derivs. of 2,4-(R)-2,6,8,12-tetraoxa-4,10-diazatetracyclo[5.5.0.05.903.11]dodecane (R=H, F, CH₃, NO₂ (TEX)) were calcd. using d. functional theory at the B3LYP/6-31+G(d,p) level of theory. These reactions should yield new high energy d. materials (HEDM) based on cationic TEX derivs. and dinitramic anions. The first proton affinities of the TEX derivs. are in a range between (-178.2) and (-218.3) kcal·mol⁻¹. The second proton affinities range from (-80.3) to (-112.4) kcal·mol⁻¹. Therefore, 1:1 salts should easily be formed. All calcd. structures of the mono- and dicationic species and all neutral species represent true min. (NIMAG=0) at the B3LYP/6-31+G(d,p) level of theory. The heats of detonation of the 1:1 and also for the 1:2 salts in the solid state were studied theor. The compds. that were identified as the most promising HEDM's were the salts of the dinitramic anion (1:1-450.8 kcal·mol⁻¹; 1:2 -719.7 kcal·mol⁻¹). The heat of formation of the 1:1 salt [TEXH]⁺[N(NO₂)₂]⁻ was calcd.
 ACCESSION NUMBER: 2002:605695 CAPLUS
 DOCUMENT NUMBER: 138:237660
 TITLE: New high energy density materials (HEDM) based on derivatives of 2,4-dinitro-2,6,8,12-tetraoxa-4,10-diazatetracyclo[5.5.0.05.903.11] dodecane cations and dinitramic anions
 AUTHOR(S): Schutt, Thomas; Ang, How Ghee; Klapotke, Thomas M.
 CORPORATE SOURCE: Department of Chemistry, National University of Singapore, 117543, Singapore
 SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 141/1-141/12
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 32 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB New ingredients (fuels) for the pyrotechnic gas generators were synthesized and characterized by a thermochem. est. of the combustion of binary (fuel-oxidant) mixts. For this purpose, some fragments of high energy materials were replaced by less energetic and more suitable for safe gas generation subunits. In general, keto derivs. of energetic heterocyclic compds. were emphasized. Combustion was carried out in the presence of ammonium nitrate, ammonium dinitramide, and sodium nitrate oxidizers.
 ACCESSION NUMBER: 2002:605683 CAPLUS
 DOCUMENT NUMBER: 138:58339
 TITLE: Synthesis of organic high nitrogen compounds as pyrotechnic gas-generating ingredients
 AUTHOR(S): Sheremetev, Aleksei B.; Yudin, Igor L.; Makhova, Nina N.; Ovchinnikov, Igor V.; Lemper, David B.
 CORPORATE SOURCE: N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 119991, Russia
 SOURCE: International Annual Conference of ICI (2002), 33rd(Energetic Materials), 128/1-128/12
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 33 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB In the last years ammonium dinitramide, ADN, appeared to be a promising new oxidizer and a possible substitute for ammonium nitrate, AN, and esp. for the chlorinated oxidizer ammonium perchlorate. Among others main advantages of ADN are the higher energy input combined with a reduced pressure for decompr. Furthermore ADN shows no phase transitions like

AN. For judging the purity of the synthesized and/or treated or aged pure or formulated ADN so far the estd. ammonium nitrate content was taken into account. AN is known to be a byproduct of the ADN synthesis as well as a possible decompr. product of ADN. Thermally treated ADN decomps. mainly to N₂O, H₂O, NO₂, and AN which further reacts to N₂O and NH₃. So detg. the nitrate contents assuming the rest is intact ADN must not lead to true values esp. in cases where ADN was treated/handled at higher temps. in open systems. Concerning the synthesis of ADN tech.-scale moreover the precursor ammonium nitrourethane, ANU must be eliminated in a quick but sufficient way needing a suitable anal. method for detecting nitrourethane besides nitrate and ADN. Objective of this work was to develop a suitable ion chromatog. method for the direct anal. of the anions concerned. Different ion exchanger phases were tested with org. and/or inorg. eluents. The ionic strength and flow rate of the eluent was improved to get an acceptable resoln. for nitrite and nitrate combined with a short run time for the whole anal. Detection was realized by elec. cond. or UV absorption whereby the measurement wavelengths were optimized in order to get a small signal to noise ratio and simultaneously a suitable sensitivity esp. for NO₃ and nitrourethane. Under improved conditions (ion Pac 11, 1 mL/min NaOH, 300 mmol) limits of detection, LOD of 0.05-0.01 ppm were realized for NO₃ and NO₂ resp. measured at 214 nm. Using 220 nm as detection wavelength resulted in a LOD of about 0.3 ppm for nitrate. Using a wavelength between 210-220 nm results in a LOD for ANU of about 1 ppm. Linearity range for the anal. of DN- (285 nm) was found to be very broad (up to 700 ppm). All anions can be analyzed in one run taking maximal 30 min.

ACCESSION NUMBER: 2002:605664 CAPLUS
DOCUMENT NUMBER: 138:41505
TITLE: Analysis of ADN, it's precursor and possible byproducts using ion chromatography
AUTHOR(S): Bunte, Gudrun; Neumann, Heinz; Antes, Juergen; Krause, Horst
CORPORATE SOURCE: Fraunhofer-Institut fuer Chemische Technologie (ICT), Pfingstal, 76327, Germany
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 117/1-117/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 34 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Flame structure and combustion mechanism of ammonium dinitramide(ADN)/polycaprolactone (PCL) composite solid propellant were studied at 0.1 MPa by micro-thermocouple technique, probe mass spectrometry, and videotape recording. Two types of PCL with mol. wt. of 10000 (later on PCL(10000)) and 1250 (PCL(1250)) were used. Besides, an effect of CuO additive on propellant burning rate was investigated. Combustion of ADN/PCL strands was dependent on type of polycaprolactone. In the case of PCL(10000) propellant strands burned without visible flame with low temp. of combustion products, whereas ADN/PCL(1250) showed a non-homogeneous non-stationary combustion with formation of luminous torches. Three zones of chem. reactions in flame were detected. Vapor of ADN, products of decompr. of the oxidizer and binder, and also products of their interaction were obstd. near the burning surface. It was shown that the compn. of nitrogen-contg. species in dark flame zone of ADN/PCL(1250) at 0.1 MPa is close to that of pure ADN at 0.6 MPa. Complete compn. of combustion products in luminous flame zone was also detd. It was established that burning rate of ADN/PCL(1250) propellant (as in the case of pure ADN and ADN/HTPB propellant) is controlled by reactions in condensed phase. Computer modeling of chem. reactions in the dark flame zone by using exptl. data on compn. and temp. of species near the burning surface was conducted. The calcd. temp. and concns. of species in flame were compared with exptl. data. Obtained data on flame structure of ADN/PCL propellant can be used for development of combustion model of this propellant.

ACCESSION NUMBER: 2002:605645 CAPLUS
DOCUMENT NUMBER: 138:41476
TITLE: Flame structure and combustion chemistry of ammonium dinitramide/polycaprolactone propellant
AUTHOR(S): Korobeinichev, Oleg P.; Volkov, Evgeny N.; Paletsky, Alexander A.; Bolshova, Tatyana A.; Tereshchenko, Alexander G.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch of Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 104/1-104/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 35 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review of known non metallic dinitramide oxidizers, that is dinitramide salts with a pos. oxygen balance. Presently six such salts are identified. Among them hydroxylammonium dinitramide, HADN, has the highest oxygen balance. Due to this and the fact that it is poorly investigated, efforts were made to synthesize it to be able to characterize some of its properties. The results however, indicate that HADN do not exist at ambient condition. The reason might be that hydroxylamine is a to weak base. By adding two equiv. of hydroxylamine to one equiv. of dinitramide a white cryst. substance was formed. Anal. identified the substance to be hydroxylammonium-hydroxylamine dinitramide.

SRI-14. Its m.p. and enthalpy of melting was found to be 84.degree. and 200 J/g resp. At a heating rate of 10.degree./min, SRI-14 starts to decomp. at approx. 150.degree., as is the case for many dinitramide salts.

ACCESSION NUMBER: 2002:605625 CAPLUS
DOCUMENT NUMBER: 138:41461
TITLE: Non metallic dinitramide oxidisers
AUTHOR(S): Wingborg, Niklas; Johansson, Martin
CORPORATE SOURCE: Grindsgjoen Research Centre, FOI, Swedish Defence Research Agency, FOI, Tumba, SE-147 25, Swed.
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 91/1-91/10
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 36 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Thermoanal. investigations on advanced oxidizer-binder system viz., ammonium dinitramide (ADN) and glycidyl azide polymer (GAP) were carried out by thermogravimetry (TG) and differential scanning calorimetry (DSC) techniques. The phenomol. and kinetic aspects of the thermal decompr. of ADN, GAP and ADN-GAP mixt.(3:1 by wt.) were evaluated from TG and DSC data. The effect of heating rate on the above parameters was studied. The melting of ADN at 92+-2 degree. is followed by its decompr. In the temperature range of 145-225 degree. GAP decomps. exothermically in the range of 195-255.degree.. ADN-GAP mixt. shows single stage decompr. in the range of 140-190 degree. The kinetic parameters viz., activation energy E, and pre-exponential factor A, for the thermal decompr. were evaluated by variable program rate T. Ozawa (1975, 1976) and H. E. Kissinger (1956) methods. The activation parameters for all the three systems were also evaluated by the integral Coats-Redfern equation for a comparison. Based on the thermo anal. data it is inferred that the decompr. of ADN and GAP is mutually catalyzed in the mixt.

ACCESSION NUMBER: 2002:605586 CAPLUS
DOCUMENT NUMBER: 138:41490
TITLE: Thermal decomposition kinetic studies on ammonium dinitramide (ADN)-glycidyl azide polymer (GAP) system
AUTHOR(S): Santhosh, G.; Venkatachalam, S.; Francis, A. U.; Krishnan, K.; Catherine, Korah Bina; Ninan, K. N.
CORPORATE SOURCE: Propellants and Special Chemicals Group, Vikram Sarabhai Space Centre, Trivandrum, 695 022, India
SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 64/1-64/14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 37 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB This investigation was conducted with the purpose to evaluate ammonium perchlorate, ammonium nitrate, ammonium dinitramide, and hydrazinium nitroformate as potential oxidizers in the compns. of solid rocket propellants. The investigation included thermodyn. anal. of combustion products of propellants made on the basis of these components, exptl. investigation of ammonium dinitramide-based propellants, and comparison of various characteristics of the propellants being considered. Ammonium dinitramide at present represents a real ammonium perchlorate alternative as a component of solid rocket propellants. Its use can essentially reduce cost of putting into orbit a payload mass unit, at the same time diminishing the ecol. damage made by the operation of the carrier missile.
 The scope of problems, soin. of which should ensure the development of highly efficient ammonium dinitramide-based propellants is defined.

ACCESSION NUMBER: 2002:605509 CAPLUS
 DOCUMENT NUMBER: 138:26479
 TITLE: Solid rocket propellants on the basis of ammonium dinitramide. Problems and perspective applications
 AUTHOR(S): Babuk, Valery A.; Vasilyev, Viacheslav A.; Molostov, Dmitry B.
 CORPORATE SOURCE: Baltic State Technical University, St. Petersburg, 199005, Russia
 SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 21/1-21/15
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 38 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB HNIW and ADN are new energetic charges for smokeless, low vulnerability and low polluting propellants. Thermogravimetric anal., differential scanning calorimetry, thermal diffusivity measurements are used to get thermal and kinetic consts. of these charges and their degradn. The linear pyrolysis method under vacuum is applied to the study of the condensed phase degradn. from these charges. This method provides the propellant regression while completely quenching the gas phase reactions. The condensed phase degradn. produced mainly nitrogenated gaseous species (and only from HNIW, complementary hydrocarbon species) which are analyzed by mass spectrometry. Various solid residues are analyzed and identified by IR spectrometry and elemental anal. Three types of combustion expts., such as temp. profile from very fine thermocouples imbedded in the sample giving the regression surface temp., the slope in the gas phase and sometimes the flame temp., such as regression under laser fluxes giving the ignition delay and such as combustion rate measurements by the ultrasonic method, are giving well fitted combustion laws of these propellant compds. All these results are compared with those extd. from the literature. They complete the knowledge of the complex phenomena, related to these charges, occurring during the propellant combustion.

ACCESSION NUMBER: 2002:605490 CAPLUS
 DOCUMENT NUMBER: 138:41470
 TITLE: Study of the condensed phase degradation and combustion of two new energetic charges for low polluting and smokeless propellants : HNIW and ADN
 AUTHOR(S): Hommel, Jean; Trubert, Jean-Francois
 CORPORATE SOURCE: Applied and Fundamental Energetics Department, ONERA, Chatillon, 91220, Fr.
 SOURCE: International Annual Conference of ICT (2002), 33rd(Energetic Materials), 10/1-10/17
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 39 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review of methods of producing ammonium dinitramide (ADN) prills abroad in recent years. Actions of intermedia, dispersant, surface active agent, and stabilizer on ADN, and methods of selecting these auxiliary agents are discussed.

ACCESSION NUMBER: 2002:590484 CAPLUS
 DOCUMENT NUMBER: 138:6180
 TITLE: Study on prilling process of ammonium dinitramide (ADN)
 AUTHOR(S): Ma, Yue; Zhang, Hai-lin
 CORPORATE SOURCE: The 42nd Institute, The Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
 SOURCE: Guti Huojian Jishu (2002), 25(2), 59-62
 CODEN: GHJIFL; ISSN: 1006-2793
 PUBLISHER: Guti Huojian Jishu Bianjibu
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Chinese

L4 ANSWER 40 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB For the calcn. of the performance parameters of combustion processes, equil. thermodyn. processes are taken into account. On the other hand, non-equil. reactions occur, mostly connected with low pressure burning. In this paper, several explosives, explosive mixts., solid and liq. propellants are calcd. It is shown how energy output and gas formation depend on the oxygen balance and the enthalpy of formation. The reason for the higher specific energy of liq. propellants is due to the increased formation of gases consisting of H₂, N₂, and H₂O, compared with conventional solid propellants based on nitrocellulose and nitroglycerin, which produce more CO and CO₂. Non-equil. combustion of solid propellants was found at very low loading densities or pressures lower than 1-2 MPa. In this case, the reaction products measured by mass spectrometry, such as NO, N₂O and HCN, are metastable and highly toxic, producing a much lower heat of explosion compared with equil. burning measured and calcd.

ACCESSION NUMBER: 2002:540858 CAPLUS
 DOCUMENT NUMBER: 137:37221
 TITLE: Performance parameters of explosives: equilibrium and non-equilibrium reactions
 AUTHOR(S): Volk, Fred; Bathelt, Helmut
 CORPORATE SOURCE: Fraunhofer-Institut fuer Chemische Technologie ICT, Pfzinthal, D-76327, Germany
 SOURCE: Propellants, Explosives, Pyrotechnics (2002), 27(3), 136-141
 CODEN: PEPEYD; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 45 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The electron d. and related properties of biguanidinium dinitramide (BIGH_2) (DN) and biguanidinium bis-dinitramide (BIGH_2) (DN)₂ crystals (space groups P.hivin.1 and C2/c) have been detd. from low-temp. [90(1) K] X-ray diffraction expts. The Hansen-Coppens multipole model as implemented in the XD program gave R = 0.0247 and 0.0201 (all reflections) which allowed the calcn. of the electron d. and Laplacian distributions. The bonding (3,-1) crit. points were also found. The anal. of the results shows that Bader's topol. theory provides a more useful description of the chem. bonding in the studied crystals as compared to the classical anal. of deformation densities. The hydrogen bonding in the crystals was analyzed.
 The at. charges were integrated over the at. basins.
 ACCESSION NUMBER: 2002:469820 CAPLUS
 DOCUMENT NUMBER: 137:154657
 TITLE: Chemical Bonding in Biguanidinium Dinitramide and Biguanidinium Bis-Dinitramide from Experimental X-ray Diffraction Data
 AUTHOR(S): Zhurova, Elizabeth A.; Martin, Anthony; Pinkerton, A. Alan
 CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo,
 OH, 43606, USA
 SOURCE: Journal of the American Chemical Society (2002), 124(29), 8741-8750
 CODEN: JACSAT; ISSN: 0002-7863
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 46 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The vapor pressure and heat of evapn. are detd. in thermal decompn. of ammonium dinitramide in a two-temp. flow reactor at 80-140.degree.. The mechanism of thermal decompn. including the evapn. stage (i.e., transition from the condensed to the gaseous state in the form of mol. complex $\text{NH}_3\text{HN}(\text{NO}_2)_2$ with subsequent decompn. to NH_3 and $\text{HN}(\text{NO}_2)_2$) of the ammonium dinitramide is detd. on the basis of the obtained results. The compn. of thermal decompn. products of the ammonium dinitramide vapor is detd. by mass spectrometry at 160-900.degree.. The effective thermal decompn. rate of the ammonium dinitramide vapor is detd. at 160-320.degree.. The mol. thermal decompn. of the ammonium dinitramide vapor is carried out in a flow reactor on the basis of suggested mechanism by using the detd. decompn. rate constns.
 ACCESSION NUMBER: 2002:460361 CAPLUS
 DOCUMENT NUMBER: 137:313117
 TITLE: Study of thermal decomposition of ammonium dinitramide
 AUTHOR(S): Shmakov, A. G.; Korobeinichev, O. P.; Bol'shova, T. A.
 CORPORATE SOURCE: Inst. Khim. Kinetiki i Gorenija, SO RAN, Novosibirsk, 630090, Russia
 SOURCE: Fizika Gorenija i Vzryva (2002), 36(3), 37-47
 CODEN: FGVAZ; ISSN: 0430-6228
 PUBLISHER: Izdatel'stvo Sibirsogo Otdeleniya RAN
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 47 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An instrument of a relatively simple construction is applied to det. the elec. spark sensitivity (EES) of polynitro compds. and inorg. azides. Attention was focused also on the relation between the EES values and granulometry of RDX and HMX, and on the dependence of these values on the content of hard admnts. to RDX (up to 15% by wt.). Relations are found between the resulting EES values and the values of this sensitivity detd. by means of other types of app. and in other labs. These relations are strongly affected by mol.-structure factors and construction differences between the individual testers. An attempt is presented at specification of the relation between the EES of azides and their heats of explosion (Q). The value of Q = 2.472 kJ g-1 for mercury(II) azide is estd. from this relationship.
 ACCESSION NUMBER: 2002:437874 CAPLUS
 DOCUMENT NUMBER: 137:249847
 TITLE: Notices to determination of the electric spark sensitivity of energetic materials
 AUTHOR(S): Koci, Jiri; Zeman, Svatopluk; Majzik, Jiri; Strnad, Jiri
 CORPORATE SOURCE: Department of Theory & Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
 SOURCE: New Trends in Research of Energetic Materials, Proceedings of the Seminar, 5th, Pardubice, Czech Republic, Apr. 24-25, 2002 (2002), 110-126.
 Editor(s): Vagenknecht, Jiri. University of Pardubice: Pardubice, Czech Rep.
 CODEN: 69CSE3; ISBN: 80-7194-435-1
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 48 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The development of microthrusters for microspacecraft applications was an important task for the aerospace industry. The design of a first prototype microthruster and results of preliminary tests with gaseous reactants in small combustion chambers are presented. The use of electrolytic ignition techniques are discussed for the initiation of the liq. propellant. The propellant formulations included an energetic oxidizer, an alc. fuel, and H_2O as liq. carriers. A moderate propellant of the compn. 35% H_2O , 50% hydrazinium nitroformate and 15% MeOH is presented. The microthruster was fabricated from alumina, but also mullite could be used due to its excellent thermal shock properties and compatibility with the liq. propellant.
 ACCESSION NUMBER: 2002:437562 CAPLUS
 DOCUMENT NUMBER: 137:65343
 TITLE: Development of a liquid propellant microthruster for small spacecraft
 AUTHOR(S): Yetter, R. A.; Yang, V.; Milius, D. L.; Aksay, I. A.; Dryer, F. L.
 CORPORATE SOURCE: Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, University Park, PA, 16802, USA
 SOURCE: Chemical and Physical Processes in Combustion (2001) 377-380
 CODEN: CPPCD9; ISSN: 0277-1128
 PUBLISHER: Combustion Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 49 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Several platinum, rhodium or palladium supported catalysts are prep'd. focusing the thermal stability in oxidizing atm.; the stability is improved by adding doping elements to the support. The catalytic activity
 is detd. in a lab. batch reactor and from thermal anal. The catalytic tests by using HAN-TEAN-H₂O mixts. led to lower pressure increases than the calcd. values. Without the presence of a catalyst, the thermal decompn. reaction started at 115.degree., leading to the formation of gaseous products and condensed polymn. products. In the presence of the best catalyst, the onset of the decompn. is lowered to .apprx. 70.degree..
 The presence of CH₂-CH₂ fragments in the fuel part of the monopropellant is an impediment to a full decompn. into gaseous products. The replacement of TEAN by urea or glycine led to blended monopropellants displaying poorer catalytic decompn. at low temps. Binary HAN-water mixt. gave results similar to the decompn. of propellant contg. TEAN. The comparison of different propellant components was made on the basis of calcd. adiabatic temp. and specific impulse. The more energetic oxidizer is HNF.

ACCESSION NUMBER: 2002:406525 CAPLUS
 DOCUMENT NUMBER: 136:403843
 TITLE: Decomposition of different monopropellants at laboratory level methodology, experimental results and performance calculations. Application to HAN based propellants and H₂O₂
 AUTHOR(S): Blairdi, Rachel; Rossignol, Sylvie; Duprez, Daniel; Kappenstein, Charles; Pillet, Nicolas; Melchior, Antoine
 CORPORATE SOURCE: Catalyse par les Metaux, Universite de Poitiers, Poitiers, 86022, Fr.
 SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484 [Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001], 149-155
 CODEN: ESPUD4; ISSN: 0379-6566
 PUBLISHER: ESA Publications Division
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 50 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The benefits of advanced HNF monopropellants are discussed. The areas of consideration comprise the operational and performance aspects, the general handling, the benign less-toxic characteristics and the envisaged redn. of manufg., test and operational costs. The recently proposed developments and applications of advanced monopropellants for satellite propulsion are considered. Besides HNF monopropellants, others can be considered like ammonium dinitramide (ADN) and hydroxyl ammonium nitrate (HAN). The evaluation of the parameter matrix justifies the selection of HNF as promising alternative as a less-toxic monopropellant for satellite propulsion. The selection of HNF is mainly based on the fact that HNF offers a higher potential performance growth than other monopropellants. The specific propulsion issues with the application of HNF are presented on both component and system level. The thruster has to cope, among other aspects, with catalyst compatibility and long-term stability. The system components like the feed lines, tanks and others need verification. The GSE however might be simplified significantly. The application of HNF offers a high potential of operational advantages and justifies the required efforts for the introduction and the development of HNF in satellite propulsion.

ACCESSION NUMBER: 2002:406524 CAPLUS
 DOCUMENT NUMBER: 136:403842
 TITLE: Industrial benefits of applying HNF in monopropellant satellite propulsion
 AUTHOR(S): den Fick, M.; Schiebener, P.; Moerel, J. L. P. A.; van Berg, R. P.; Sanders, H. M.; Welland-Veltmans, W. H. M.
 CORPORATE SOURCE: Astrium GmbH, Lampoldshausen, Germany
 SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484 [Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001], 138-147
 PUBLISHER: ESA Publications Division
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 51 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The present paper describes the effort to develop a novel storable liq. monopropellant for space applications based on ammonium dinitramide, ADN. A previous paper has described the propellant formulation, basic properties of ADN and possible propellant compns. based on ADN. With low toxicity, handling safety, and high performance as driving criterion, a baseline propellant consisting of 61% ADN, 26% water, and 13% glycerol was formulated and tested. Other ADN-based propellant blends have also been formulated and tested. This paper contains a discussion on propellant candidates and testing of different propellant blends with emphasis on combustion stability and pulse performance. The outcome of the tests performed is that combustion stability can be significantly improved by both modifying the rocket engine design and the propellant compn. Pulses between 0.3 s and approx. 1 min have been run, and consecutive restarts have been demonstrated under ambient and vacuum conditions. The present paper does also discuss some of the most crit. issues in the development of a rocket engine and a propulsion system for ADN-based propellants. The major issues in this context are long-lived catalyst bed or an alternative ignition method and high temp. resistant materials. The combustion temp. of ADN-based propellants is in the 2000 K range.

ACCESSION NUMBER: 2002:406522 CAPLUS
 DOCUMENT NUMBER: 136:403841
 TITLE: ADN-based monopropellents-A green propellant candidate
 AUTHOR(S): Anflo, K.; Gronlund, T. A.; Westerberg, B.; Wingborg, N.
 CORPORATE SOURCE: Swedish Space Corporation, Solna, SE-171 04, Swed.
 SOURCE: European Space Agency, [Special Publication] SP (2001), SP-484 [Proceedings of the First International Conference on Green Propellants for Space Propulsion, 2001], 128-137
 CODEN: ESPUD4; ISSN: 0379-6566
 PUBLISHER: ESA Publications Division
 DOCUMENT TYPE: Journal; (computer optical disk)
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 52 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A sampling method is described for detn. of amt. of combustion products of solid rocket fuel mixts. at 2500-3200 K and 4-8 MPa at the conditions close to those of rocket engines. A two-stage device that enables to freeze the sample with bypassing the shock wave in the sampler is described. The sampling accuracy is verified by math. modeling of gas dynamics of the flow and kinetics of chem. reaction. The relative variation of concn. in most stable gas components during sampling from flames is < 3% and in H₂ and CO is 12%. The possibility of sepn. of CO and N₂ from the sample with subsequent anal. in time-of-flight mass spectrometer is considered. The concn. of CO and CO₂ in the combustion products of ammonium dinitramide solid propellant with polycaprolactone is detd. at 4 MPa.

ACCESSION NUMBER: 2002:404088 CAPLUS
 DOCUMENT NUMBER: 137:4056942
 TITLE: Probe method for sampling of combustion products of solid rocket fuel at temperatures and pressures typical of a rocket engine combustion chamber
 AUTHOR(S): Skovorodko, Tereshchenko, A. G.; Korobkinichiev, O. P.; P. A.; Palatetskii, A. A.; Volkov, E. N.
 CORPORATE SOURCE: Inst. Khim. Kinetiki i Gorenija, SO RAN, Novosibirsk, 630090, Russia
 SOURCE: Fizika Gorenija i Vzryva (2002), 38(1), 92-104
 PUBLISHER: Izdatel'stvo Sibirsogo Otdeleniya RAN
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 53 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structure of the energetic compd., [Ni(en)3][N(NO₂)₂]₂, and the conformations of the dinitroamide anions which depend on the nature of the cation and on their geometrical size and shape were investigated. Since crystn. leads to differently shaped crystals, an x-ray diffraction anal. for the overall product of crystn. was performed. Conformational anal. of N(NO₂)₂- anions in the compd. showed that the steric and electronic factors in each anion, which are comparable in energy, lead to different orientations of the planes of the nitroamine groups relative to the plane of the three nitrogen atoms.

ACCESSION NUMBER: 2002:395857 CAPLUS
 DOCUMENT NUMBER: 137:171927
 TITLE: Crystal structure of the energy compound tri(ethylenediamine) nickel (II) dinitroamide [Ni(en)₃][N(NO₂)₂]₂
 AUTHOR(S): Romanenko, G. V.; Varand, V. L.; Poberezskaya, N. V.
 CORPORATE SOURCE: Institute of Inorganic Chemistry, Siberian Branch, Russian Academy of Sciences, Russia
 SOURCE: Journal of Structural Chemistry (Translation of Zhurnal Strukturnoi Khimii) (2001), 42(6), 1036-1039 CODEN: JSTCAM; ISSN: 0022-4766
 PUBLISHER: Kluwer Academic/Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 55 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Study of the hydrolysis of N,N'-dinitrourea resulted in the development of convenient procedures for synthesizing nitramide on the basis of urea. New reactions of nitramide were examd.

ACCESSION NUMBER: 2002:282984 CAPLUS
 DOCUMENT NUMBER: 137:169116
 TITLE: Chemistry of urea nitro derivatives: II. Synthesis of nitramide from N,N'-dinitrourea. New reactions of nitramide
 AUTHOR(S): Lobanova, A. A.; Il'yasov, S. G.; Popov, N. I.; Sataev, R. R.
 CORPORATE SOURCE: Altai Federal Research and Production Center, Biisk, 659322, Russia
 SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (2002), 38(1), 1-6 CODEN: RJOCQ; ISSN: 1070-4280
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 137:169116
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 54 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method of producing prilled ADN with liq. org. compd. as medium is presented. Hygroscopicity, particle size distribution, impact sensitivity, friction sensitivity, and surface structure of prilled ADN are studied. The prilled ADN has lower hygroscopicity and sensitivity than flake or needle ADN. Prilled ADN with particle sizes from 5-800 μ m can be produced in this way.

ACCESSION NUMBER: 2002:363573 CAPLUS
 DOCUMENT NUMBER: 137:187780
 TITLE: Study on prilled ammonium dinitramide (ADN)
 AUTHOR(S): Ma, Yue; Zhang, Hai-lin
 CORPORATE SOURCE: The 42nd Institute of Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
 SOURCE: Gutu Huojian Jishu (2002), 25(1), 29-32
 PUBLISHER: Gutu Huojian Jishu Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 56 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB At. interactions between oxygen atoms have been analyzed in terms of the AIM for the biguanidinium dinitramide and biguanidinium bis-dinitramide crystals. The electron d. has been derived from X-ray diffraction data obtained at 90 K, and the potential energy d. has been calc'd. using the d. functional approach. Bond crit. points have been found on the O(1).cntdot..cntdot..cntdot.O(4) interat. line in both the electron d. and potential energy d. gradient fields. The bond path and its assocd. virial path have been obtained. The interaction has been identified as a bonding closed-shell type interaction.

ACCESSION NUMBER: 2002:259505 CAPLUS
 DOCUMENT NUMBER: 137:11174
 TITLE: Characterizing the Oxygen-Oxygen Interaction in the Dinitramide Anion
 AUTHOR(S): Zhurova, Elizabeth A.; Tsirelson, Vladimir G.; Stash, Adam I.; Pinkerton, A. Alan
 CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
 SOURCE: Journal of the American Chemical Society (2002), 124(17), 4574-4575 CODEN: JACSAU; ISSN: 0002-7863
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 121 THERE ARE 121 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 57 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB FOX-12, or N-guanylurea dinitramide, is a novel energetic material with low sensitivity and good potential for use as a propellant or insensitive munitions (IM) explosive. This paper reports its synthesis, sensitivity (friction and drop wt.), thermal stability and explosion temp., as well as its bulk crystal d. (.rho.=1.7545 g/cm³, by powder x-ray anal.), and its heat of formation (.DELTA.H.degree.f=355 kJ/mol, by bomb calorimetry). The activation energy (E_a=277 kJ/mol) was measured with a differential scanning calorimeter (DSC). The ignition temp. was measured using Wood's metal bath (T_{ign}=192 .degree.C.). Using a thermo-chem. code (Cheetah 1.40), and the exptl. detd. values of d. and heat of formation, the performance was estd.

ACCESSION NUMBER: 2002:152473 CAPLUS
 DOCUMENT NUMBER: 136:388118
 TITLE: N-guanylurea-dinitramide: a new energetic material with low sensitivity for propellants and explosives applications
 AUTHOR(S): Ostmark, H.; Bennm, U.; Bergman, H.; Langlet, A.
 CORPORATE SOURCE: FOI, Energetic Materials Department, Swedish Defence Research Agency, Stockholm, SE-172 90, Sweden
 SOURCE: Thermochimica Acta (2002), 384(1-2), 253-259
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 58 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal stabilities of 3,6-dihydrazido-1,2,4,5-tetrazine (H₂Tz) and its salts with dipercchlorate [H₂Tz(HClO₄)₂], dinitrate [H₂Tz(HNO₃)₂], biadintramide [H₂Tz(HDN)₂] [where HDN is HN(NO₂)₂], and biadinitroimidazole [H₂TzBim] were examd. and compared to other 3,6-disubstituted tetrazines. The neutral tetrazines exhibited two principal modes of decompr.: elimination of N₂ from the tetrazine ring followed by cleavage of the remaining N-N bond, and loss of the substituent group, in some cases assisted by proton transfer. The salts H₂TzX₂ undergo reversible equil. with the parent H₂Tz and HX, thus, in several cases the decompr. rate of the parent tetrazine and the salt are essentially identical.

ACCESSION NUMBER: 2002:152460 CAPLUS
 DOCUMENT NUMBER: 137:22072
 TITLE: Thermal decomposition of high-nitrogen energetic compounds-dihydrazido-S-tetrazine salts
 AUTHOR(S): Oxley, Jimmie C.; Smith, James L.; Chen, Heng
 CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, RI, 02881, USA
 SOURCE: Thermochimica Acta (2002), 384(1-2), 91-99
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 59 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The low temp. thermal stability of ammonium dinitramide (ADN) and efforts to improve the thermal stability are presented. The decompr. rates of ADN at 60, 70, 80, and 90.degree. were investigated. Several potential thermal stabilizers were investigated to suppress the low temp. decompr. (60-90.degree.) of ADN. The potential stabilizers investigated were potassium fluoride, potassium dinitramide, a 6-member ring or polymeric phosphorous compd. [P(C₆H₅)₆]_n, polymer, and perhydro-1,3,5-triazine-2,4,6-trione, commonly known as Verkade's super base (VC). Comparison of the decompr. of pure ADN and 1-2% by mass mixts. of ADN and the potential stabilizers are presented. Finally, the low temp. stabilizers are compared to hexamethylene tetramine (commonly known as urotropine or hexamine). Verkade's super base is most effective.

ACCESSION NUMBER: 2002:152456 CAPLUS
 DOCUMENT NUMBER: 137:22065
 TITLE: Thermal stability of ammonium dinitramide
 AUTHOR(S): Mishra, Indu B.; Russell, T. P.
 CORPORATE SOURCE: Department of Chemistry, Howard University, ASEE Summer Visiting Faculty, Washington, DC, 20059, USA
 SOURCE: Thermochimica Acta (2002), 384(1-2), 47-56
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 60 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A rapid and simple method to det. the purity of ADN was studied. The expt. was carried out with non-aq. potentiometric titrn. into MI and a quaternary ammonium salt was used as the titrant, while AN, the major impurity present in ADN, which tends to cause serious interference was removed by MI. The std. deviation of the method is 0.0019 and its coeff. of variation is 0.19%.

ACCESSION NUMBER: 2002:143924 CAPLUS
 DOCUMENT NUMBER: 136:388130
 TITLE: Purity determination of ammonium dinitramide
 AUTHOR(S): Ma, Xin-geng; Lin, Xiu-rong
 CORPORATE SOURCE: The 42nd Institute of the Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
 SOURCE: Guti Huojian Jishu (2001), 24(4), 56-58, 61
 CODEN: GHJFL; ISSN: 1006-2793
 PUBLISHER: Guti Huojian Jishu Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 61 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The synthesis of guanidine dinitramide (GDN) by the reaction of ADN and guanidine salt is studied. Its structure is identified by IR and UV spectrum anal. and its properties are measured. The properties of GDN are superior to those of ADN and NG.
 ACCESSION NUMBER: 2002:143923 CAPLUS
 DOCUMENT NUMBER: 136:388129
 TITLE: Synthesis and properties test of a new energetic compound guanidine dinitramide
 AUTHOR(S): He, Jin-Xuan; Yang, Tong-hui; Zhang, Hai-lin
 CORPORATE SOURCE: The 42nd Institute of the Fourth Academy of CASC, Xiangfan, 441003, Peop. Rep. China
 SOURCE: Gut Huojian Jishu (2001), 24(4), 53-55
 CODEN: GHJIFL; ISSN: 1006-2793
 PUBLISHER: Gut Huojian Jishu Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 62 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Today, the market of space development is involved in international competition. This causes strict requirements for the technologies such as solid rocket motor to acquire higher performance with reduced cost. The potential is described of energetic materials-based compns. as the most promising candidates for the future propellants. The expected performance and the major tech. issues for the development are also discussed.
 ACCESSION NUMBER: 2002:114308 CAPLUS
 DOCUMENT NUMBER: 136:327739
 TITLE: Future propellant
 AUTHOR(S): Maruizumi, Haruki
 CORPORATE SOURCE: Res. & Development Center, IHI Aerospace Co., Ltd., 21-1, Matobashinmachi, Kawagoe-shi, Saitama-ken, 350-1107, Japan
 SOURCE: Explosion (2001), 11(3), 158-162
 CODEN: EXPLED
 PUBLISHER: Nippon Kayaku Kogyokai
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

L4 ANSWER 63 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium nitrate is prep'd. with good smoke properties and improves energy loss characteristics upon using potassium dinitramide as the phase stabilizer. Ammonium nitrate and potassium dinitramide are dissolved in solvent (e.g., water, DMF, and DMSO) together to give a satd. soln., followed by addn. of a miscible solvent as the pptg. agent (e.g., nitriles, ethers, arom. compds., halogenated hydrocarbons) to recover the ammonium nitrate. Thus, 65.7 wt.% ammonium nitrate, 5.7 wt.% potassium dinitramide, and 28.6 wt.% water were mixed to give a satd. aq. soln., followed by addn. of acetonitrile, and stirred for 1 h to give the phase-stabilized ammonium nitrate.
 ACCESSION NUMBER: 2002:110330 CAPLUS
 DOCUMENT NUMBER: 136:120703
 TITLE: Purification of phase-stabilized ammonium nitrate by addition of potassium dinitramide
 INVENTOR(S): Kim, Jun Hyung; No, Man Kyun; Seo, Tae Seok
 PATENT ASSIGNEE(S): Agency for Defence Development, S. Korea
 SOURCE: Repub. Korean Kongkiae Taeho Kongbo, No pp. given
 CODEN: KRXXA7
 DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2000015463	A	20000315	KR 1998-35390	19980829
PRIORITY APPLN. INFO.: KR 1998-35390 19980829				

L4 ANSWER 64 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The oxidizers contain hydroxylammonium nitrate and hydrazinium nitroformate, ammonium dinitramide, NH₄NO₃, and/or H₂O₂. The propellants contain 5-15% of solid fuels and 95-85% of the oxidizers. The oxidizers have low m.p. and high b.p. for easy handling at wide temp. region, low corrosivity and toxicity, and long-term storage stability.
 ACCESSION NUMBER: 2002:63421 CAPLUS
 DOCUMENT NUMBER: 136:104714
 TITLE: Liquid oxidizers and their use in hybrid propellants for rockets
 INVENTOR(S): Takishita, Yukio; Shibamoto, Hidefumi; Onda, Toshio; Kuwahara, Takeo
 PATENT ASSIGNEE(S): Hosoya Fireworks Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JIOCXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002020191	A2	20020123	JP 2000-201567	20000703
PRIORITY APPLN. INFO.: JP 2000-201567 20000703				

L4 ANSWER 65 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Invention proposes fire-extinguishing compns. contg. dinitramide salts and/or their mixt. with alkali and/or alkali-earth metal and ammonium nitrates and/or perchlorates as an oxidizer for use as various-destination rocket fuels. Such rocket fuels contain a thermally scattered component 0.2-5.0, the oxidant 70.0-76.0, a binder 8.0-14.0, and additives 10.8-20.0 wt.%.
 ACCESSION NUMBER: 2002:58908 CAPLUS
 DOCUMENT NUMBER: 136:97996
 TITLE: Application of fire-extinguishing compositions as rocket fuel
 INVENTOR(S): Perepechenko, B. P.; Korobenina, T. P.; Pak, Z. P.; Shishov, N. I.
 PATENT ASSIGNEE(S): Russia
 SOURCE: Russ., No pp. given
 CODEN: RUXXE7
 DOCUMENT TYPE: Patent
 LANGUAGE: Russian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2157270	C2	20001010	RU 1998-119144	19981023
PRIORITY APPLN. INFO.: RU 1998-119144 19981023				

L4 ANSWER 67 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The influence of reaction conditions on the formation of ammonium dinitramide, NH4N(NO2)2, by conversion of N2O5 with NH3 was studied and the reaction system was modeled. A system of 3 overall reactions of N2O5 with NH3 was postulated, of which only 1 leads to NH4N(NO2)2 (besides 2 equivs. of NH4NO3). Kinetic modeling leads to a model which describes the selectivity for NH4N(NO2)2 in good agreement with exptl. data. It shows that the selectivity is dependent on the concn. ratio of the products, but not on their abs. concns.
 ACCESSION NUMBER: 2001:913792 CAPLUS
 DOCUMENT NUMBER: 136:104628
 TITLE: Modeling of the reaction of ammonia with dinitrogen pentoxide for synthesis of the halogen-free ammonium dinitramide for solid rocket fuels
 AUTHOR(S): French, Christian; Weisweller, Werner
 CORPORATE SOURCE: Inst. Chem. Tech., Univ. Karlsruhe, Karlsruhe, D-76128, Germany
 SOURCE: Chemie Ingenieur Technik (2001), 73(11), 1401-1407
 CODEN: CITEAH; ISSN: 0009-286X
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 66 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In this article, ammonium dinitramide (ADN) was prepd. from acrylonitrile and the mechanism of 2,2'-dicyanoethoxyamine was discussed and the best reaction condition was studied.
 ACCESSION NUMBER: 2001:917845 CAPLUS
 DOCUMENT NUMBER: 136:249824
 TITLE: Studies on synthesis of ADN. II
 AUTHOR(S): Zhang, Zhi-zhong; Wang, Bo-zhou; Zhu, Chun-hua; Shi, Zun-chang; Jia, Yue-mei
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
 SOURCE: Hanneng Cailliao (2001), 9(3), 97-99
 CODEN: HACAFQ; ISSN: 1006-9941
 PUBLISHER: Hanneng Cailliao Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 68 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review on the use of microencapsulation technol. to improve the processing, handling and storage characteristics of particulate energetic materials. Various material systems have been developed and tested for suitability as coatings for energetic materials. The following material systems, consisting of a core material and outer wall material, were found to be suitable for the encapsulation process: ammonium dinitramide (ADN) coated with cellulose acetate butyrate (CAB); hexanitrohexaazaisowurtzitane coated with cellulose acetate phthalate; and tetramethylene tetranitramine (HMX) coated with amino resin. Results show that glass particles with a mean diam. of 50 μm could be coated with stearyl stearate in a fluidized-bed using supercrit. carbon dioxide as a carrier fluid and solvent of the coating. Comprehensive characterization of these materials is required to assess the quality of these coatings and to improve the process.
 ACCESSION NUMBER: 2001:908895 CAPLUS
 DOCUMENT NUMBER: 136:123993
 TITLE: Microencapsulation of particulate materials
 AUTHOR(S): Teipel, U.; Heintz, T.; Krober, H.
 CORPORATE SOURCE: Fraunhofer-Institut für Chemische Technologie (ICT), Pfärring 76318, Germany
 SOURCE: Powder Handling & Processing (2001), 13(3), 283-288
 CODEN: PHAPER; ISSN: 0934-7348
 PUBLISHER: Trans Tech Publications
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 69 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Visual flame characteristics, burning rates, and final flame temps. for propellants based on ammonium dinitramide (ADN) and hydroxyl-terminated polybutadiene (HTPB) at different HTPB concns. (3-20%) are studied at pressures of 0.05-0.6 MPa. The flame structure was studied by probing mol.-beam mass-spectrometry, thin thermocouples, and video recording.
 The burning-zone width at 0.1 MPa was apprx. 1.5 mm. Thermocouples revealed temp. fluctuations of about +/- 400 K at 0.1 MPa in the flame zone within 1.5-4 mm from the burning surface. Along with temp. fluctuations, fluctuations also occurred in the intensities of the mass peaks of mass spectra of samples withdrawn from the flame. These are a consequence of the nonhomogeneous and nonstationary combustion of the propellant. Video recordings revealed the existence of several brightly luminous flame jets (torches) of apprx. 1 mm in diam. at the burning surface, disappearing from one site and re-appearing at another. Combustion products are found remote from the burning surface and in its immediate vicinity by using mol.-beam mass spectrometry. The reactions in the condensed phase (mainly the ADN decompr. reaction) control ADN/HTPB propellant combustion. The oxidn. of HTPB decompr. products in the gas phase increases the heat release there and accelerates reactions in the first and second zones of the ADN flame.

ACCESSION NUMBER: 2001:875725 CAPLUS
 DOCUMENT NUMBER: 136:186273
 TITLE: Flame structure of ADN/HTPB composite propellants
 AUTHOR(S): Korobeinichev, Oleg P.; Paletsky, Alexander A.
 CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion,
 Siberian Branch Russian Academy of Sciences,
 Novosibirsk, 630090, Russia
 SOURCE: Combustion and Flame (2001), 127(3), 2059-2065
 CODEN: CBFMAO; ISSN: 0010-2180
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 71 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An exp'l. study of aluminized solid rocket propellant combustion was conducted in order to det. the effect of various propellant formulation factors on metal agglomeration. The results allowed to det. the dependencies of the agglomeration process characteristics on the phys. and mech. properties of the propellant binder, the particle size of the metal fuel, the type of film covering the original metal particles, and the type of oxidizer in the propellant. These results, combined with earlier data, were used to develop a phys. picture of the agglomeration process, which may serve as the basis for conducting anal. of the effect of various propellant formulation factors on agglomeration.

ACCESSION NUMBER: 2001:781816 CAPLUS
 DOCUMENT NUMBER: 136:56018
 TITLE: Propellant formulation factors and metal agglomeration
 AUTHOR(S): Babuk, V. A.; Vassiliev, V. A.; Sviridov, V. V.
 CORPORATE SOURCE: Baltic State Technical University, St. Petersburg, Russia
 SOURCE: Combustion Science and Technology (2001), 163, 261-289
 CODEN: CBSTB9; ISSN: 0010-2202
 PUBLISHER: Gordon & Breach Science Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 70 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Single salts of energetic acids with methylene bis(oxyamine), CH₂(OH)₂nHX (HX = HNO₃, HC1O₄, H₂N-NH-NH₂, and HC(NO₂)₃; n = 1 or 2), were synthesis in good to high yields and characterized by vibrational (IR and Raman) and NMR (1H and 13C) spectroscopies, and differential scanning calorimetry and thermogravimetry. The single-crystal x-ray diffraction pattern of the diperchlorate salt was also carried out. In addn., safety studies (impact and friction sensitivities) were carried out on most of the new materials, as well as the thermal stabilities of the salts at 75 degree.. Initial thermal stability studies indicated a high thermal sensitivity and ruled out any future plans for incorporation into propellants. Small-scale safety tests showed that many of the new compds. were quite sensitive and would not be safe to handle on a large scale.

ACCESSION NUMBER: 2001:810918 CAPLUS
 DOCUMENT NUMBER: 136:104694
 TITLE: The synthesis and characterization of methylene bis(oxyamine) CH₂(-O-NH₂)₂ salts
 AUTHOR(S): Tollison, Kerri; Drake, Greg; Hawkins, Tom; Brand, Adam; McKay, Milton; Ismail, Ismail; Merrill, Claude; Petrie, Mark; Bottaro, Jeff; Highsmith, Thomas; Gilardi, Richard
 CORPORATE SOURCE: AFRL/PRSP and ERC, Inc., Edwards Air Force Base, CA, 93524-7190, USA
 SOURCE: Journal of Energetic Materials (2001), 19(4), 277-303
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 72 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The flame structure of composite propellants and sandwiches based on ammonium dinitramide (ADN) and glycidyl azide polymer at 0.015-0.3 MPa was studied by mol. beam mass spectrometry. A zone near the surface, apprx. 1.5 mm wide, was detected, where reactions occur. The gas compn. near the surface of burning ADN laminae at 0.1 MPa was close to that near the surface of burning pure ADN at 0.3 MPa. Among the species responsible for reactions in the flame near the surface, the most probable are HNO₃, dinitramic acid, and the vapor of ADN. The luminous zone of the flame extends more than 10 mm from the surface. The compn. of the final combustion products has been detd. by freezing at the temp. of liq. nitrogen and indicates incomplete combustion. The temp. profiles measured with thin thermocouples confirm the measured widths of the near-surface and luminous zones. The final temp. at the pressure of 0.3 MPa is as high as 2600 K.

ACCESSION NUMBER: 2001:701900 CAPLUS
 DOCUMENT NUMBER: 136:8601
 TITLE: Mass spectrometric study of combustion of GAP- and ADN-based propellants
 AUTHOR(S): Kuibida, I. V.; Korobeinichev, O. P.; Shmakov, A. G.; Volkov, E. N.; Paletsky, A. A.
 CORPORATE SOURCE: Russian Academy of Science, Institute of Chemical Kinetics and Combustion, Novosibirsk, 630090, Russia
 SOURCE: Combustion and Flame (2001), 126(3), 1655-1661
 CODEN: CBFMAO; ISSN: 0010-2180
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 73 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An app. for inflating an airbag includes: (1) a container which contains
 a combustible material that consists of a binder selected from cellulose acetate butyrate and cellulose acetate propionate, in which a first binder
 binder has a m.p. of 230-260 degree, and a second binder with a m.p. of
 125-205 degree., (2) an igniter for the combustible material, and (3) a conduit for conducting the hot combustion gases from the igniter to the main charge of combustible material, which then inflates the airbag.
 Other suitable binders include cellulose acetate and nitrocellulose. The binders have a glass transition temp. of <165 degree.. The combustible igniter may also contain a non-metallic nitrogen compd. (e.g., nitroguanidine, triaminoguanidine nitrate, ethylene dinitramine, ethylenediamine dinitrate, 1,3,3-trinitroazetidine, RDX, HMX, TNT, 2,4,6-trinitrophenylmethylnitramine, and PETN), and an oxidizer (e.g., ammonium nitrate, alkali metal and alk. earth metal nitrates, ammonium perchlorate, ammonium dinitramide, quaternary ammonium nitrate, and alkali metal and alk. earth metal perchlorates).
 ACCESSION NUMBER: 2001:643325 CAPLUS
 DOCUMENT NUMBER: 135:197582
 TITLE: Combustible igniter composition for solid propellants for airbag inflation containing high-melting-point organic binders
 INVENTOR(S): Mangum, Michael G.; Quart, David C.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001017175	A1	20010830	US 1997-969028	19971112
US 6368431	B2	20020409		

 PRIORITY APPLN. INFO.: US 1997-969028 19971112

L4 ANSWER 74 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of 2 amine base salts, the hydrazinium (I) and the hydroxylammonium (II) of dinitramide were detd. Compd. I crystallizes in the monoclinic space group P21/n with a 8.312(3), b 5.654(1), c 10.659(3) .ANG., .beta. = 93.73(3) degree., Z = 4, dc = 1.848 for 857 obsd. reflections with Fo > 4.sigmas.(Fo), R(F) = 0.0387, wR(F2) = 0.0936 (I > 2.sigmas.(I)), while II crystallizes in the orthorhombic space group Pbca (nonstandard setting of Pbca) with a 6.439(2), b 12.470(4), c 30.816(14) .ANG., Z = 8, dc = 1.859 for 1051 obsd. reflections with Fo > 4.sigmas.(Fo), R(F) = 0.0479, wR(F2) = 0.0810 (I > 2.sigmas.(I)). The structures of I and II contain protonated amine cations and dinitramide anions linked by H-bonding. In addn., in II there are both neutral and zwitterionic hydroxylamine moieties involved in the H-bonding scheme. Thus in II the complete formula unit is (NH3+OH)2[N3O4-12.(NH2OH)], (NH3+O-), and in this structure the hydroxylamine exists in its 3 possible forms: protonated, neutral, and zwitterionic. In both structures the conformations adopted by the dinitramide anions can be related to the types of H-bonds it forms with the surrounding amine cations.
 ACCESSION NUMBER: 2001:629299 CAPLUS
 DOCUMENT NUMBER: 135:350771
 TITLE: A new class of flexible energetic salts. Part 6. The structures of the hydrazinium and hydroxylammonium salts of dinitramide
 AUTHOR(S): Gilardi, Richard; Butcher, Ray J.
 CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
 SOURCE: Laboratory, Washington, DC, 20375, USA
 Journal of Chemical Crystallography (2000), 30(9), 599-604
 CODEN: JCCTEV; ISSN: 1074-1542
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 75 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium dinitramide (ADN) is a new energetic material that can be used as an oxidizer in solid rocket propellants. In the last few years, a no. of papers devoted to the study of ADN combustion mechanism have been published. Mol. beam mass-spectrometry and thermocouple measurements are here used to study ADN flame structure at pressures of 0.3 and 0.6 MPa. Measurements include species concns. and temp. profiles. A general mechanism for describing the chem. reactions in an ADN flame (172 reactions and 31 species) is developed based on these exptl. studies and literature data. The scheme includes a sub-mechanism (98 reactions and 22 species) for propellants combustion suggested by R. Yetter and F. Dryer (1992). The latter is further supplemented by a set of 74 reactions, including 63 steps suggested by Lin and Park and the ADN dissociation reactions suggested by the authors of this paper. The correlation between the exptl. and calcn. results is satisfactory.
 ACCESSION NUMBER: 2001:625712 CAPLUS
 DOCUMENT NUMBER: 135:290891
 TITLE: Modeling the chemical reactions of ammonium dinitramide (ADN) in a flame
 AUTHOR(S): Korobeinichev, O. P.; Bolshova, T. A.; Paletsky, A. A.
 CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
 SOURCE: Combustion and Flame (2001), 126(1/2), 1516-1523
 CODEN: CSFMAO; ISSN: 0010-2180
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 76 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB This paper is devoted to the investigation of the main combustion characteristics of a model composite solid rocket propellant based on ammonium dinitramide (ADN) and polycaprolactone in the pressure range of 4.0-8.0 MPa. Polycaprolactone with mol. wt. (MW) of 10,000, pCLN(10,000), and polycaprolactone diol with MW of 1,250, pCLN(1250), were used. Exptl. data on the dependence of burning rate on pressure for an ADN/pCLN propellant of stoichiometric compn. and for this propellant with different additives are presented in paper. Oxides of copper and lead in the range of 1-2% were used as catalytic additives. Another oxidizers (ammonium perchlorate, ammonium nitrate), cyclic nitramines (RDX, HMX) and aluminum in the amt. of 10% were used as energetic additives. The dependence of the propellant burning rate on the initial temp. has been investigated. Comprn. of the combustion products of the propellant with and without aluminum at pressures of 4.0 and 8.0 MPa has been detd. Temp. of the final combustion products of the propellant without an additive and for some propellants with an additive has been detd. by a thermocouple method.
 ACCESSION NUMBER: 2001:605134 CAPLUS
 DOCUMENT NUMBER: 135:332982
 TITLE: Study of combustion characteristics of the ADN-based propellants
 AUTHOR(S): Korobeinichev, Oleg P.; Paletsky, Alexander A.; Tereshenko, Alexander G.; Volkov, Evgeny N.; Lyon, J. Michael; Carver, James G.; Stanley, Robert L.
 CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion SB RAS, Novosibirsk, 630090, Russia
 SOURCE: International Annual Conference of ICT (2001), 32nd(Energetic Materials), 123/1-123/14
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 77 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Several properties of ammonium dinitramide (ADN) concerning the recrystn. process from melting were investigated. The surface tension of molten ADN at 97.degree. was measured to 89 mN/m. The wetting-angles between molten ADN and different solid surfaces (polytetrafluoro ethylene, glass, steel and Al) were detd. The wettability depends on the surface tension of molten ADN, the free surface energy of the solid surfaces and the interfacial tension between solid and liq. Observations of the recrystn. behavior of molten ADN showed that there is no nucleation even at supercooling rates of 70 K. It is possible to start crystn. by the application of seed crystals.
 ACCESSION NUMBER: 2001:605073 CAPLUS
 DOCUMENT NUMBER: 135:228911
 TITLE: On the crystallization of ammonium dinitramide
 AUTHOR(S): Teipel, U.; Heintz, T.
 CORPORATE SOURCE: Fraunhofer-Institut fuer Chemische Technologie (ICT), Pfinztal, 76327, Germany
 SOURCE: International Annual Conference of ICT (2001), 32nd(Energetic Materials), 49/1-49/12
 CODEN: IACIEO; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 78 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The gas-generating pyrotechnic compn. for airbags contains guanylureadinitramide 5-95, guanidine dinitramide .1toreq.90, an O donor 5-50, and optionally a binder .1toreq.10 wt%. The O donor compd.(s) is(are) selected from groups of (1) nitrates, perchlorates, and permanganates of alkali metals, (2) oxides of Fe, Ni, Co, and Mn, and (3) oxides of transition metals.
 ACCESSION NUMBER: 2001:594523 CAPLUS
 DOCUMENT NUMBER: 135:139394
 TITLE: Gas-generating composition for automobile airbags
 INVENTOR(S): Persson, Svante; Sjoqvist, Conny
 PATENT ASSIGNEE(S): Bofors BEPAB AB, Swed.
 SOURCE: Swed., 15 pp.
 CODEN: SSXAY
 DOCUMENT TYPE: Patent
 LANGUAGE: Swedish
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 514335	C2	20010212	SE 1998-4610	19981230
SE 9804610	A	20000701		

 PRIORITY APPLN. INFO.: SE 1998-4610 19981230

L4 ANSWER 79 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The basics of microencapsulation techniques are described together with the different process variants. Expts. are reported concerning the coating of water-sol. and insol. materials using the phase sepn. (coacervation) technique. The following systems were investigated: ammoniumdinitramide coated with ethylcellulose, ammoniumdinitramide coated with cellulose acetobutyrate, hexanitrohexaazaisowurtzitane coated with cellulose acetylphthalate, and tetramethylenetetrarnine coated with an amino resin. Furthermore, the coating of glass spheres with a mean diam. of 50 .mu.m with stearyl stearate was investigated in a lab.-scale high-pressure fluidized-bed app. with CO₂ as the supercrit. fluid.
 ACCESSION NUMBER: 2001:565791 CAPLUS
 DOCUMENT NUMBER: 135:259227
 TITLE: Microencapsulation of reactive materials
 AUTHOR(S): Heintz, T.; Krober, H.; Teipel, U.
 CORPORATE SOURCE: Fraunhofer-Institut fuer Chemische Technologie (ICT), Pfinztal, 76318, Germany
 SOURCE: Schuettgut (2001), 7(1), 27-32
 CODEN: SCHUF8; ISSN: 0946-7939
 PUBLISHER: Trans Tech Publications
 DOCUMENT TYPE: Journal
 LANGUAGE: German
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 80 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal behavior of fifteen nitrosubstituted azetidines, 3,3-dinitroazetidinium dinitramide, 3,3-dinitroazetidinium nitrate, 3,3-dinitroazetidinium nitroform salt, 3,3-dinitroazetidinium-3,5-dinitrobenzoate, 3,3-dinitroazetidinium picrate, 3,3-dinitroazetidinium-3-nitro-1,2,4-triazol-5-onate, 1,3-bis(3',3'-dinitroazetidinyl)-2,2-dinitropropane, 1-(2',2',2'-trinitroethyl)-3,3-dinitroazetidine, 3,3-dinitroazetidinium perchlorate, (9), 1-(3',3'-dinitroazetidinyl)-2,2-dinitropropane, 3,3-dinitroazetidinium-2,4,6-trinitrobenzoate, bis(3',3'-dinitroazetidinyl) ketone, 1-(2',4'-dinitrophenyl)-3,3-dinitroazetidine, 1-(4',6'-trinitrophenyl)-3,3-dinitroazetidine, bis(3',3'-dinitroazetidinyl) oxalone in static air has been studied by means of differential scanning calorimetry. Based on the results, the relative thermal stability order and two relationships between the kinetic parameters, and the exothermic decompn. temp. and thermal explosion crit. temp. for above-mentioned nitrosubstituted azetidines were proposed.
 ACCESSION NUMBER: 2001:565328 CAPLUS
 DOCUMENT NUMBER: 136:281561
 TITLE: Thermal behavior of nitrosubstituted azetidines
 AUTHOR(S): Zhang, Jiao-qiang; Hu, Rong-zu
 CORPORATE SOURCE: Department of Chemical Engineering, Northwestern Polytechnical University, Xi'an, 710072, Peop. Rep. China
 SOURCE: Hanneng Cailliao (2001), 9(2), 66-69
 CODEN: HACAFQ; ISSN: 1006-9941
 PUBLISHER: Hanneng Cailliao Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 81 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Plane-wave ab initio calcns. based on d. function theory and the pseudopotential method were used to study the structural properties of cryst. ammonium dinitramide (ADN) under hydrostatic compression in the pressure range 0-300 GPa. Optimization of the crystal structure was done with full relaxation of st. positions and lattice parameters without any symmetry constraints. The calcns. were performed using periodic boundary conditions in all three directions. Changes in the electronic bands, charge distributions, and geometric parameters of the crystal were computed as functions of pressure. The ADN crystal maintains its monoclinic structure with P21/c symmetry for pressures up to 10 GPa,

where there is a transition to a P.hivin.1 triclinic symmetry. The cryst. phase transition involves reorientation of the ammonium ions relative to the dinitramide ions as well as addnl. rotations of the NO₂ groups relative

to the N-N plane of dinitramide ions.

ACCESSION NUMBER: 2001:504609 CAPLUS

DOCUMENT NUMBER: 135:203225

TITLE: Quantum Mechanical Studies of Pressure Effects in Crystalline Ammonium Dinitramide

AUTHOR(S): Sorescu, Dan C.; Thompson, Donald L.

CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA

SOURCE: Journal of Physical Chemistry A (2001), 105(31), 7413-7422

CODEN: JPCAFH; ISSN: 1089-5639

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 82 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Liq. propellants, esp. for use in space travel, is comprised of a soln. of: (1) a dinitramide salt, of general formula X-D (D = O₂N-NH-NO₂) or the anion; A is the cations derived from NH₃, amines, hydrazine, and methylated hydrazines) as the oxidizer; and (2) an org. fuel, selected from PhOH, PhCH₂OH, Cl-6-alcs., amines, carboxylic acids, amino acids, ketones, aldehydes, satd. liq. hydrocarbons, and Cl-6-glycols and polyhydric alcs. These propellants are characterized by a low toxicity, no toxic or combustible vapors, high theor. specific impulse, high d_r, easy ignition, storageability at 10-50.degree., and low sensitivity (compared with conventional hydrazine fuels).

ACCESSION NUMBER: 2001:480582 CAPLUS

DOCUMENT NUMBER: 135:79058

TITLE: Liquid propellants for space travel containing nitrogen-containing dinitramide salts and a liquid organic fuel

INVENTOR(S): Anflo, Kjell; Wingborg, Niklas

PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.

SOURCE: U.S., 7 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6254705	B1	20010703	US 1999-258390	19990226
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PRIORITY APPLN. INFO.: OTHER SOURCE(S): MARPAT 135:79058

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 83 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB This paper is a brief thermodyn. calcn. of the thermochem. properties of monopropellants, composite propellants, and metallized solid composite propellants (binder, Al or Al/Mg and AP). The calcns. were performed for rocket equil. at 70 bar, considering an adiabatic through a nozzle in one-dimensional flow at chem. equil. and with an expansion ratio 70:1. The calcns. of flame temp., mol. wt. of combustion products, specific impulse and compn. of combustion products were performed for propellant formulations on the base binder (PBAN, epoxy resin, and DORA) with solid loading in the range 60-100% (AP, ADN, RDX, HMX, Cl2O, HNF, ONC, HNRAA, SORGUY, HHTDD, HNHAW, TNAZ, Al, Al/Mg). As a propellant ingredient, ONC and HNRAA (based on their high d. and high pos. heat formation) can significantly enhance the performance of rocket propellants.

ACCESSION NUMBER: 2001:476838 CAPLUS

DOCUMENT NUMBER: 135:228900

TITLE: Thermochemical properties of composite propellants combustion products

AUTHOR(S): Florczak, Bogdan; Lipinska, Katarzyna
Institute of Industrial Organic Chemistry, Warsaw, 03-236, Pol.

SOURCE: New Trends in Research of Energetic Materials, Proceedings of the Seminar, 4th, Pardubice, Czech Republic, Apr. 11-12, 2001 (2001), 86-98. Editor(s): Zeman, Svatopluk. University of Pardubice:

Pardubice, Czech Rep.
CODEN: 69BKIC

DOCUMENT TYPE: Conference

LANGUAGE: English

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 84 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB A flowable solid propellant is prep'd. by adding pellets of crosslinked hydrogel polymer to a liq. oxidizer in a mixing tank such that the oxidizer is absorbed into the pellets. Following formation of the flowable combustible pellets, the solid propellant flows into the combustion chamber. Suitable crosslinked hydrogel polymers include polyvinyl alc., polyacrylamide, hydroxyl group-functionalized cellulose (e.g., Mc cellulose), polysaccharides, polyvinyl amines, polyvinyl ethers, polyethylene glycol, polypropylene glycol, and polytetrahydrofuran. Suitable liq. oxidizers are selected from hydrogen peroxide, hydroxylammonium nitrate, hydroxyl ammonium dinitramide, hydroxylammonium salts, nitrate salts (e.g., ammonium nitrate), dinitramides (e.g., ammonium dinitramide), nitroformates (e.g., hydroxylammonium nitroformate), and perchlorates.

ACCESSION NUMBER: 2001:435435 CAPLUS

DOCUMENT NUMBER: 135:48293

TITLE: Flowable solid propellants consisting of crosslinked hydrogel polymer with absorbed liquid oxidizer

INVENTOR(S): Mahaffy, Kevin E.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2001003294	A1	20010614	US 1998-197541	19981112
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PRIORITY APPLN. INFO.: US 6361629 B2 20020326 US 1998-197541 19981112

L4 ANSWER 85 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Relatively cool-burning nonazide-based gas generating compns. for inflation of a vehicle occupant protection device (e.g., airbags) consist of an org. fuel, phase-stabilized ammonium nitrate, optionally a sinter-forming material, and an ammonium halide coolant, in which a combustion product is produced consisting of the halide anion of the ammonium halide coolant and an alkali metal or alk. earth metal cation of the phase stabilizer. The phase stabilizer for ammonium nitrate include alkali metal and alk. earth metal nitrates, nitrites, peroxides, or dinitramides. The org. fuels are selected from cyanamides, tetrazoles, carbonamides, triazoles, guanidine (and guanidine salts), triazines, tetramethylammonium nitrate, tetrazines, urea, and urea salts.

ACCESSION NUMBER: 2001:352173 CAPLUS

DOCUMENT NUMBER: 134:342365

TITLE: Phase-stabilized ammonium nitrate-based cool-burning nonazide propellants for inflation of vehicle airbags

INVENTOR(S): Blomquist, Harold R.

PATENT ASSIGNEE(S): TRW Inc., USA

SOURCE: U.S. 5 pp., Cont.-in-part of U.S. 6,143,104.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6231702	B1	20010515	US 1998-92718	19980605
US 6143104	A	20001107	US 1998-26980	19980220
JP 11322492	A2	19991124	JP 1999-40167	19990218
JP 3157501	B2	20010416		
DE 19925442	A1	20000127	DE 1999-19925442	19990602
			US 1998-26980	A 19980220
			US 1998-92718	A 19980605

PRIORITY APPLN. INFO.:
 REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 86 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Gas-phase reactions of HONO with species of atm. interest, NO₂, O₃ and HCl, were investigated by means of ab initio mol.-orbital and transition-state theory calcns. For the HONO + NO₂ reaction, the most favorable pathway is found to be the abstraction of OH in HONO by NO₂, leading to the formation of HNO₃ and NO products. The activation energies

computed at the G2M (RCC,MP2) level of theory for the abstraction from trans- and cis-HONO are predicted to be 31.6 and 33.4 kcal/mol, resp. At 300 K, the calcd. rate const. is smaller than 1.2 .times. 10-14 cm³ mol⁻¹ s⁻¹. For the HONO + O₃ reaction, the barrier height for the prodn. of HNO₃ + O₂ is predicted to be 15.0 kcal/mol with the rate const. at 300 K, 5.7 .times. 10-2 cm³ mol⁻¹ s⁻¹. For the trans- and cis-HONO + HCl fwdrw. H₂O + ClNO reactions, the G2M calcns. predict the corresponding barrier heights of 12.9 and 14.4 kcal/mol with predicted rate consts.,

1.3 .times. 102 and 0.13 .times. 102 cm³ mol⁻¹ s⁻¹ at 300 K. The results of theor. modeling indicate that the three gas-phase reactions are too slow to be significant under the stratospheric and tropospheric conditions.

ACCESSION NUMBER: 2001:341101 CAPLUS

DOCUMENT NUMBER: 135:94719

TITLE: HONO redox reactions relevant to the combustion of AP and ADN. (II). Reactions with NO₂, O₃ and HCl

AUTHOR(S): Lin, M. C.; Lu, Xin; Park, J.

CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA

SOURCE: CPIA Publication (2000), 701(JANNAF 37th Combustion Subcommittee Meeting, 2000, Vol. 1), 273-283

PUBLISHER: CODEN: CPPUDT; ISSN: 0272-5118

Chemical Propulsion Information Agency

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 87 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The reacn. of HONO by HNO and NH₃ was investigated by means of ab initio MO and transition-state-theory calcns. The main reaction channels for the HNO + trans-HONO (cis-HONO) reactions are those proceeding via 5-member ring transition states leading to the prodn. of NO and H₂O. In the temp. range 300-1000 K, TST calcns. predict an A factor of 2.25 .times. 10¹⁰ cm³ mol⁻¹ s⁻¹ (or 3.63 .times. 10¹⁰ cm³ mol⁻¹ s⁻¹) and an apparent activation energy of 20.9 kcal/mol (or 21.9 kcal/mol) for the HNO + trans-HONO (or cis-HONO) reaction. In the NH₃ + HONO system, the reaction NH₃ + cis-trans-HONO .fwdrw. H₂NH + H₂O with barrier heights around 34 kcal/mol, can occur at high temps. The reversible H-atom exchange reaction NH₃ + cis-HONO .H₂NH-O(H)-NONH₂H + cis-HONO occurs readily. The calcd. rate const. for the reaction at 300 K is 1.06 .times. 10⁶ cm³ mol⁻¹ s⁻¹, in reasonable agreement with the exptl. value of 2.2 .times. 10⁶ cm³ mol⁻¹ s⁻¹.

ACCESSION NUMBER: 2001:341100 CAPLUS

DOCUMENT NUMBER: 135:94718

TITLE: HONO redox reactions relevant to the combustion of AP and ADN. (I). Reactions with HNO and NH₃

AUTHOR(S): Lin, M. C.; Lu, Xin; Musin, Ryza N.

CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA

SOURCE: CPIA Publication (2000), 701(JANNAF 37th Combustion Subcommittee Meeting, 2000, Vol. 1), 261-271

PUBLISHER: CODEN: CPPUDT; ISSN: 0272-5118

Chemical Propulsion Information Agency

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 88 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A numerical anal. was developed to study the detailed phys. and chem. processes involved in ADN combustion. The anal. is based on the conservation equations of mass, species concn. and energy for both condensed and gas phases, and takes into account finite-rate chem. kinetics and real thermophys. properties. A chem. kinetics scheme, contg.

totally 33 species and 180 or more reactions, was established and employed to investigate the gas-phase flame structure. The anal. was applied to ADN self-deflagration at 6 atm with the inlet condition modified from measurement to maintain at. balance. Results show better agreement with exptl. data than the previous results reported last year. The predicted final-product compn. is consistent with chem. equil. A global decompr. reaction is proposed and employed in the condensed-phase model to obtain the inlet condition necessary to model the gas-phase flame. However, the resulting condensed-phase soln. is not consistent with the gas-phase

flame because the interfacial energy balance condition is not satisfied. Further investigation into the initial decompr. of ADN in both condensed and gas phases are suggested.

ACCESSION NUMBER: 2001:339764 CAPLUS

DOCUMENT NUMBER: 135:63379

TITLE: An improved model of ammonium dinitramide (ADN) combustion with detailed chemistry

AUTHOR(S): Liu, Y.-C.; Yang, V.

CORPORATE SOURCE: Post-Doctoral Researcher, Chemical Science and Technology Division, Los Alamos National Laboratory, Los Alamos, NM, 87545, USA

SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 1), 369-377

PUBLISHER: CODEN: CPPUDT; ISSN: 0272-5118

Chemical Propulsion Information Agency

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 89 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal reaction of NH₃ with NO_x ($x = 1, 2$) has been investigated by the pyrolysis/FTIR spectrometric technique in the temp. range 575–710 K. The measured kinetic data for the disappearance of the reactants and the formation of products were modeled with a detailed mechanism for the H/N/O–system recently established for the AN/ADN decompr. reactions. Agreement between the kinetically modeled concns. and the exptl. measured values is quite satisfactory for both the reactants (NH₃ and NO_x) and the products (NO and N₂O). Sensitivity analyses show that the reaction of NO_x
 with NH₃ is most sensitive to the NH₂ + NO_x reactions, with a slightly lower sensitivity to subsequent reactions involving HONO.
 ACCESSION NUMBER: 2001:339730 CAPLUS
 DOCUMENT NUMBER: 135:48284
 TITLE: Kinetic modeling of the thermal reaction of NO₂ with NH₃
 AUTHOR(S): Lin, M. C.; Park, J.; Cates, Sonya
 CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
 SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 2), 305-316
 CODEN: CPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 60 THERE ARE 60 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 90 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review with 68 refs. of characteristics and mechanisms of thermal decompn. and combustion of ammonium dinitramide (ADN). The basic process and products of ADN thermal decompn. and its thermal stability were introduced. Based on the results of many exptl. and theor. studies, the mechanisms of ADN thermal decompn. were established as a function of temp. and pressure. The burning rate and combustion-wave structures of ADN depend strongly on pressure. The mechanisms of ADN combustion are characterized as the condensed-phase decompn. paths, the near-surface heat resistance zone and the moderate temp. plateau. The path of ADN-AN + N₂O is considered to be crucial reaction in the thermal decompn. and combustion of ADN.
 ACCESSION NUMBER: 2001:339727 CAPLUS
 DOCUMENT NUMBER: 135:48274
 TITLE: Thermal decomposition and combustion of ammonium dinitramide: A review
 AUTHOR(S): Yang, Rongjie; Yang, Vigor
 CORPORATE SOURCE: Department of Mechanical Engineering, Pennsylvania State University, University Park, PA, 16802, USA
 SOURCE: CPIA Publication (1999), 691(JANNAF 36th Combustion Subcommittee Meeting, 1999, Vol. 2), 255-283
 CODEN: CPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 REFERENCE COUNT: 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 91 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Demilitarization of aged Russian motors offer some unique safety challenges. Although motor designs and propellant formulations are similar to US systems, some formulation ingredients may cause increased sensitivity and reactivity that can be enhanced by aging and environmental conditions. Some propellant and motor characteristics may be out of the range of experience, requiring addnl. prepns. and training. Motor case design and propellant formulations must be considered susceptible to dielec. breakdown electrostatic discharge (ESD) ignition during handling unless it can be demonstrated otherwise. Motor handling and grounding protocol developed as a result of European and US incident investigations should be applied in all operations to mitigate potential incidents. An aggressive safety program including a formal system safety hazards anal. effort, must be in place throughout the concept, design, and operations phases of the program. Incidents can result in injury or death, shut down programs, result in considerable financial loss, generate mistrust, and jeopardize future demilitarization programs of benefit to both foreign and US interests.
 ACCESSION NUMBER: 2001:327922 CAPLUS
 DOCUMENT NUMBER: 135:23768
 TITLE: Russian solid rocket motor demilitarization safety issues
 AUTHOR(S): Brower, D. V.; Losee, L. A.
 CORPORATE SOURCE: Astro Technology Inc., Houston, TX, USA
 SOURCE: CPIA Publication (1999), 696(49th JANNAF Propulsion Meeting, 1999, Vol. 1), 131-145
 CODEN: CPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 92 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Poly(glycidyl nitrate), useful in making explosive compds., pyrotechnics and solid propellants, is prep'd. by nitrating glycerol with gtnoreq.1 nitrating source (e.g., nitric acid) to form a nitrated glycerol soln. comprising dinitroglycerin and nitroglycerin, treating the nitrated glycerol soln. with gtnoreq.1 cyclizing agent (e.g., sodium hydroxide) to convert the dinitroglycerin into glycidyl nitrate, and polymg. the glycidyl nitrate, wherein the nitroglycerin is not distd. or other vaporized to remove from the nitrated glycerol soln. or the reaction soln. prior to the polymn. of the glycidyl nitrate, and is carried along with the dinitroglycerin during polymn. The glycidyl nitrate is not exposed to elevated temps. sufficient to cause accidental explosion or deflagration of the nitrate ester, and preferably, is not heated above room temp. at any time prior to polymn.

ACCESSION NUMBER: 2001:300784 CAPLUS
 DOCUMENT NUMBER: 134:311888
 TITLE: Preparation of poly(glycidyl nitrate) from high-purity glycidyl nitrate obtained from glycerol
 INVENTOR(S): Highsmith, Thomas K.; Sanderson, Andrew J.; Cannizzo, Louis F.; Hajek, Robert M.
 PATENT ASSIGNEE(S): Cordant Technologies Inc., USA
 SOURCE: PCT Int. Appl., 23 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001029111	A1	20010426	WO 2000-US28611	20001016
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TH, RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1240234	A1	20020918	EP 2000-972207	20001016
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
US 6362311	B1	20020326	US 1999-160207B	P 19991019
PRIORITY APPLN. INFO.: US 6362311			WO 2000-US28611	W 20001016
REFERENCE COUNT: 8	THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT			

L4 ANSWER 93 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Mono- or di-addn. salts of (2-hydroxyethyl)hydrazine
 $(\text{HOCH}_2\text{CH}_2\text{NH}_2\text{NH}_2)_x \cdot (\text{X})_y$
 or $(\text{HOCH}_2\text{CH}_2\text{NH}_2\text{NH}_3)_2 \cdot (\text{X})_2$, $\text{X} = \text{NO}_3^-, \text{ClO}_4^-, \text{N}(\text{NO}_2)_2^-, \text{C}(\text{NO}_2)_3^-$, which are more energetic than hydrazine and demonstrate reduced vapor pressure and lower toxicity, are prep'd. by the salification of (2-hydroxyethyl)hydrazine with a stoichiometrically appropriate amt. of the corresponding acids in a polar solvent (e.g., methanol). Thus, (2-hydroxyethyl)hydrazine was salified with nitric acid in methanol to produce (2-hydroxyethyl)hydrazinium nitrate in 97.4% yield.
 ACCESSION NUMBER: 2001:279577 CAPLUS
 DOCUMENT NUMBER: 134:282924
 TITLE: Preparation of energetic (2-hydroxyethyl)hydrazinium salts as low-toxicity propellants and explosives
 INVENTOR(S): Brad, Adam J.; Drake, Gregory W.
 PATENT ASSIGNEE(S): United States Dept. of the Air Force, USA
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6218577	BI	20010417	US 1999-356227	19990716
PRIORITY APPLN. INFO.:			US 1998-93733P	P 19980720

 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 94 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetics of accumulation of the main products of thermal decompn. of ammonium dinitramide in the melt was investigated. The isotope compn. of nitrogen-contg. gases evolved by the decompn. of $\text{NH}_4\text{NH}_4(\text{NO}_2)_2$ and $\text{NH}_4\text{NH}_4(\text{NO}_2)_2$ was found. Easily oxidized salts, amines, amides, iodides, and other compds. sol. in the melt interfere with the liq.-phase decompr. of ammonium dinitramide.
 ACCESSION NUMBER: 2001:252469 CAPLUS
 DOCUMENT NUMBER: 134:328632
 TITLE: Stabilization of ammonium dinitramide in the liquid phase
 AUTHOR(S): Andreev, A. B.; Anikin, O. V.; Ivanov, A. P.; Krylov, V. K.; Pak, Z. P.
 CORPORATE SOURCE: Double Technology Federal Center "Soyuz", Dzerzhinskii, 140056, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2000), 49(12), 1974-1976
 PUBLISHER: RCBUEY; ISSN: 1066-5285
 DOCUMENT TYPE: Consultants Bureau
 LANGUAGE: Journal
 English
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 95 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The structure of K dinitramide (KDN), KN304, was refined in the temp. range 85-298 K from single-crystal x-ray diffraction data in monoclinic space group P21/n. The unit-cell axial lengths and the cell vol. decrease linearly on cooling with the b axis being the most sensitive to the change of temp. The β .beta. angle increases with decreasing temp. The thermal expansion of KDN is significantly anisotropic, expanding along the b axis [010] more than three times the amt. parallel to any other crystallogr. direction. Other eigenvectors of the thermal expansion tensor lie approx. parallel to the diagonals of the ac plane. A rigid-body anal. of the dinitramide ion using the TLS formalism was performed and shows that the thermal motion of the anion is well represented by the rigid-body model. The eigenvalues of the libration tensor show significant anisotropy, whereas the translation tensor is close to isotropic. The variation of all descriptions of the thermal motion with respect to temp. indicates an anharmonic contribution to the mean field potential. The direction of greatest unit-cell expansion coincides with the largest components of the displacement tensor of the K ions and the direction of the largest at. amplitudes due to the libration of the dinitramide anions.
 ACCESSION NUMBER: 2001:214206 CAPLUS
 DOCUMENT NUMBER: 135:27047
 TITLE: Anisotropic thermal expansion of potassium dinitramide: a variable-temperature crystallographic study
 AUTHOR(S): Hardie, Michael J.; Martin, Anthony; Pinkerton, A.; Alan; Zhurova, Elizabeth A.
 CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo, OH, 43606, USA
 SOURCE: Acta Crystallographica, Section B: Structural Science (2001), B57(2), 113-118
 CODEN: ABSBDB; ISSN: 0108-7681
 PUBLISHER: Munksgaard International Publishers Ltd.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 96 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermal decompn. characteristics, stability, and degradn. processes of ammonium dinitramide (ADN) were investigated by DSC and TG. Its kinetic parameters of the decompn. were measured. In addn., the binary eutectic system of ADN with ammonium nitrate (AN) and the influence of AN on decompr. processes of ADN, and relation of thermal decompn. characteristics with combustion behavior were examined.
 ACCESSION NUMBER: 2001:15860 CAPLUS
 DOCUMENT NUMBER: 134:254348
 TITLE: Thermal behavior of a new energetic material - ammonium dinitramide
 AUTHOR(S): Ziru, Liu; Yang, Luo; Cuimei, Yin; Fengqi, Zhao; Yanghui, Kong; Yaping, Qin; Pei, Zhang
 CORPORATE SOURCE: Xian Modern Chemistry Research Institute, 710065, Peop. Rep. China
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1999), 26th, 326-333
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 97 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Nondetonable or low-detonation-sensitivity, substantially non-toxic liq. monopropellants, useful as impulse propellants (e.g., for spacecraft thrusters) or gas generating compns., are formed from aq. solns. of solid oxidizers in liq. oxidizers and water-sol. liq. fuels and have a f.p. of <10 degree. Preferred solid oxidizers are water sol. nitrates including ammonium dinitramide, aminoguanidine dinitrate, ammonium nitrate, hydroxylamine nitrate, hydrazine nitrate, guanidine nitrate and aminoguanidine nitrate. Preferred liq. fuels are water sol. alcs., amines and amine nitrates, hydroxyethyl hydrazine, hydroxyethylhydrazine nitrate, cyanoguanidine, guanidine, aminoguanidine, triminoguanidine, and their nitrate salts, ethanolamine dinitrate, ethylenediamine dinitrate, polyvinyl nitrate, and aziridine.
 ACCESSION NUMBER: 2001:101080 CAPLUS
 DOCUMENT NUMBER: 134:149671
 TITLE: Nondetonable insensitive liquid monopropellant-based solutions and mixtures for use in spacecraft thrusters
 INVENTOR(S): Martin, James D.; Lundstrom, Norman H.; Scheffee, Robert S.
 PATENT ASSIGNEE(S): Atlantic Research Corporation, USA
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 200109063	A2	20010208	WO 2000-US20065	20000724
W: CA, JP, KR, MX				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
PRIORITY APPLN. INFO.:			US 1999-363013	A 19990729

L4 ANSWER 99 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The prepn. for the isotopically substituted dinitramide salts has been proposed. The 14N and 15N NMR spectra of the 15N-enriched dinitramide anion in soln. are measured and interpreted for the first time. New exptl. IR and Raman spectra are obtained for the NH⁺ and K⁺ salts of dinitramide in the solid state and in soln. The assignments are made with the help of quantum-mech. force field calcns. and normal-coordinate anal. The harmonic vibrational spectrum of the dinitramide anion calcd. at the B3LYP/6-31+G(d) level in the presence of solvent correlates best with the exptl. data. The structure and spectra of the M+CH(NO₂)₂- and M+N(NO₂)₂⁻ (M denotes a counterion) are compared and discussed. Topol. of the electron charge d. in the dinitramide anion is analyzed within the framework of Bader's theory of atoms in molts.
 ACCESSION NUMBER: 2001:47502 CAPLUS
 DOCUMENT NUMBER: 134:316382
 TITLE: On the structure and spectra of dinitramide salts
 AUTHOR(S): Shlyapochnikov, V. A.; Tafipolsky, M. A.; Tokmakov, I.; Baskir, E. S.; Anikin, O. V.; Strelenko, Y. A.; Luk'yannov, O. A.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 117913, Russia
 SOURCE: Journal of Molecular Structure (2001), 559(1-3), 147-166
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS
 FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 98 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Nitrations of org. compds., for synthesis of energetic materials, is carried out by: (1) providing a CO₂ reaction medium at .gtreq.-30.degree. and .gtreq.500 psi (corresponding to liq. or supercrit. CO₂), and (2) prep. N₂O₅ as the nitrating agent (e.g., by dehydration of anhyd. HNO₃ with P2O₅). A no. of nitrations in liq. or supercrit. CO₂ were carried out by N₂O₅ or anhyd. HNO₃, esp. for synthesis of 3-nitromethyl-3-methyloxetane, poly[3-nitromethyl-3-methyloxetane], glycidyl nitrate, .gamma.-cyclodextrin nitrate, and nitramines (esp. HMX).
 ACCESSION NUMBER: 2001:58558 CAPLUS
 DOCUMENT NUMBER: 134:118045
 TITLE: Nitration of organic compounds in liquid and supercritical carbon dioxide for synthesis of energetic materials
 INVENTOR(S): Naufflett, George W.; Farncomb, Robert E.
 PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
 SOURCE: U.S., 10 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6177033	B1	20010123	US 1999-334555	19990621
PRIORITY APPLN. INFO.:			US 1999-137233P	P 19990601
REFERENCE COUNT:	11	THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS		
FORMAT			RECORD. ALL CITATIONS AVAILABLE IN THE RE	

L4 ANSWER 100 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Rocket motor propellants contain hydroxy-terminated caprolactone ether polymer binder [as a linear block copolymer of .epsilon.-caprolactone and poly(tetramethylene ether)], with mol. wt. 2000-42001 4-10, an oxidizer 45-75, a metal fuel (e.g., Al or B) 15-24, and a plasticizer 5-12 wt.%. Suitable oxidizers are ammonium nitrate, ammonium dinitramide, RDX, and HMX; plasticizers can be energetic or nonenergetic, such as BUNEA, trimethylethane trinitrate, triethylene glycol dinitrate, diethyl adipate, or isodecyl pelargonate. Disposal of this solid propellant consists of: (1) contacting the propellant with a soin. to hydrolyze the caprolactone-based binder, yielding caprolactone and poly(tetramethylene ether); (2) removing the remaining solids in the soin. after the binder hydrolyzes. The hydrolysis step can be carried out by conversion in a 12 N NaOH or 6 N HCl soln. at .apprx.60.degree. for .apprx.24 h.
 ACCESSION NUMBER: 2001:45957 CAPLUS
 DOCUMENT NUMBER: 134:102907
 TITLE: Hydrolyzable rocket propellants containing caprolactone-polyether binders, oxidizers, and energetic plasticizers
 INVENTOR(S): Jones, Marvin Luther; Tzeng, Donald Dongjaw
 PATENT ASSIGNEE(S): United Technologies Corp., USA
 SOURCE: Eur. Pat. Appl., 8 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1069095	A1	20010117	EP 2000-305886	20000712
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6238499	B1	20010529	US 1999-356175	19990716
JP 2001064091	A2	20010313	JP 2000-213748	20000714
US 2002029829	A1	20020314	US 2000-730684	20001206
PRIORITY APPLN. INFO.:			US 1999-356175	A 19990716
REFERENCE COUNT:	5	THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS		
FORMAT			RECORD. ALL CITATIONS AVAILABLE IN THE RE	

L4 ANSWER 101 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The energetic material, ammonium dinitramide, NH₄N(NO₂)₂, is investigated with regard to its thermal decompn. behavior by using the GC/MS technol. Thermal decompn. of ADN is obtd. at 120.degree.. The main pathway is based on the formation of NH₄NO₃ and N₂O, and the thermal decompn., of NH₄NO₃ to N₂O and H₂O at higher temps. Side reactions form NO₂, NO, N₂ and O₂.
 ACCESSION NUMBER: 2001:45392 CAPLUS
 DOCUMENT NUMBER: 134:133769
 TITLE: Research of ammonium dinitramide decomposition (ADN)
 AUTHOR(S): Xu, Rong; Nie, Fu-de; Liup, Chun; Jang, Kai
 CORPORATE SOURCE: Institute of Chemical Materials, CAEP, Miyanang, 621900, Peop. Rep. China
 SOURCE: Hanneng Cailliao (2000), 8(4), 175-177
 PUBLISHER: CODEN: HACAFO; ISSN: 1006-9941
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 102 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Photolytic rate consts. for the energetic compd. ammonium dinitramide (ADN) were detd. in order to understand the fate of ADN in natural bodies of water. Quantum yields were measured at 290-400 nm using a lamp system, and these values were combined with absorption of light in a water column to model photolysis rates as a function of depth. The validity of this model was tested in field trials in Onondaga Lake, Syracuse, New York. For a summertime irradn., half-lives ranged from .apprx.6 min at the surface to .apprx.15 yr at a depth of 2 m. The predicted and obsd. degradn. rates of ADN were sufficiently similar to justify use of this simple model. The degradn. of ADN was not enhanced to any measurable degree by sensitized photoreactions in humic soils. Thus, the photodegradn. of ADN can be predicted throughout the water column of a body of water.
 ACCESSION NUMBER: 2001:30379 CAPLUS
 DOCUMENT NUMBER: 134:120393
 TITLE: Modeling the photolysis of ammonium dinitramide in natural waters
 AUTHOR(S): Beretvas, Michelle K.; Hassett, John P.; Burns, Susan E.; Basford, Trisha M.
 CORPORATE SOURCE: Department of Chemistry, College of Environmental Science and Forestry, State University of New York, Syracuse, NY, 13210-2726, USA
 SOURCE: Environmental Toxicology and Chemistry (2000), 19(11), 2661-2665
 PUBLISHER: CODEN: ETOCDK; ISSN: 0730-7268
 DOCUMENT TYPE: SETAC Press
 LANGUAGE: Journal
 English
 REFERENCE COUNT: 20 THIS THERE ARE 20 CITED REFERENCES AVAILABLE FOR RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 103 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The chem. stability is studied of ammonium dinitramide (solid rocket fuel) to moisture, oxygen, metals of variable valences, and ammonium salts. The main impurities (ammonium nitrate, ammonium sulfate, and ammonium chloride) are considered. The effects of additives (acids, ammonium salts, metal oxides, and acetylacetones) on the stability of the ammonium dinitramide, rate of dissolv. of the ammonium dinitramide salts, effects of additives of the thermal stability of the ammonium dinitramide at 80.degree. are detd.
 ACCESSION NUMBER: 2001:19883 CAPLUS
 DOCUMENT NUMBER: 134:73652
 TITLE: Chemical stability of ammonium dinitramide (ADN)
 AUTHOR(S): Pak, Z. P.; Andreev, A. B.; Ivanov, A. P.; Krylov, V. K.
 CORPORATE SOURCE: Fed. Tsentr Dvoinykh Tekhnol., Dzerzhinsk, Russia
 SOURCE: Doklady Akademii Nauk (2000), 375(3), 358-361
 PUBLISHER: CODEN: DARNEQ; ISSN: 0869-5652
 DOCUMENT TYPE: MAIK Nauka
 LANGUAGE: Journal Russian

L4 ANSWER 104 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal stabilities of 3-6-dihydrazido-1,2,4,5-tetrazine (H₂Tz) and its salts with dipercchlorate [H₂Tz(HClO₄)₂]⁻, dinitrate [H₂Tz(HNO₃)₂]⁻, bisdinitramidate [H₂Tz (HDN)₂]⁻ (where HDN is HN(NO₂)₂) and bisdinitroimidazolate [H₂Tz Bim] have been examined and compared to other 3,6-disubstituted tetrazines. The neutral tetrazines exhibited two principal modes of decompn.: elimination of N₂ from the tetrazine ring followed by cleavage of the remaining N-H bond; and loss of the substituent group, in some cases assisted by proton transfer. The salts H₂TzX₂ undergo reversible equil. with the parent H₂Tz and HX; thus, in several cases the decompn. rate of the parent tetrazine and the salt are essentially identical.
 ACCESSION NUMBER: 2000:902180 CAPLUS
 DOCUMENT NUMBER: 134:88425
 TITLE: Thermal decomposition of high-nitrogen energetic compounds-tetrazines
 AUTHOR(S): Oxley, Jimmie C.; Smith, James L.; Zhang, Jun; Chen, Heng
 CORPORATE SOURCE: Chemistry Department, University of Rhode Island, USA
 SOURCE: Proceedings of the NATA'S Annual Conference on Thermal Analysis and Applications (2000), 28th, 287-293
 PUBLISHER: CODEN: PNACCS
 DOCUMENT TYPE: NATAS
 LANGUAGE: Journal
 English
 REFERENCE COUNT: 18 THIS THERE ARE 18 CITED REFERENCES AVAILABLE FOR RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 105 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review with 46 refs. The methods of prepn. and properties of dinitroamine HN(NO₂)₂ and its salts were described. Many simple or complex salts of DNA can be considered as oxidizing components in the compns. of energetic materials. From DNA structure it would be possible to prep. ionic as well as covalent org. compds. with -N(NO₂)₂ group. These compds. can be energetic materials alone as well as salts of DNA with org. cations and complexes with org. ligands. High degree of interest in the synthesis and properties of DNA, its salts and new compds.

with -N(NO₂)₂ group was recently obsd. in literature. Main factors which accelerate studies on the synthesis and properties of DNA derivs. are their potential applicability. DNA is a strong acid, its anion possesses ambident structure: -N(NO₂)₂.O⁻.O-N = NO-O therefore, two types of salts can be formed. Similarly, alkylation of DNA leads to N- or O-alkyl derivs. Mercury dinitramide Hg(N₃O₄)₂ was extremely interesting. It is a covalent compd. (O-salt) in a solid state as well as in the soln. in nonpolar solvents. In polar solvents it dissociates forming Hg(II) cation and N₃O₄ anion. Hg(N₃O₄)₂ can be useful reagent in org. synthesis similarly to other inorg. derivs. of Hg.

ACCESSION NUMBER: 2000-858778 CAPLUS
 DOCUMENT NUMBER: 134:216330
 TITLE: Dinitroamine (DNA). Compounds with -N(NO₂)₂ group as potential components of energetic materials
 AUTHOR(S): Syczewski, Michał; Ciesielska-Gliniak, Iwona
 CORPORATE SOURCE: Zakl. Materiałów Wysokoenergetycznych, Wydz. Chem., Politech. Warszawska, Warsaw, 00-664, Pol.
 SOURCE: Wiadomości Chemiczne (2000), 54(5-6), 473-487
 CODEN: WICHAP; ISSN: 0043-5104
 PUBLISHER: Wydawnictwo Uniwersytetu Wrocławskiego
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Polish

L4 ANSWER 106 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Hybrid gas-generating materials for gas-actuated safety devices (esp. vehicle occupant airbags) consists of 5-95 wt.% guanyl urea dinitramide, 5-50 wt.% of an oxidant (based on total amt. of solids), and, if necessary, 0-90 wt.% guanidine dinitramide, <10 wt.% of finely divided boron, and <10 wt.% binder. Oxidizers are typically selected from (1) alkali metal nitrates, perchlorates, and permanganates, (2) manganese-group metal oxides (e.g., oxides of Fe, Ni, and Co), and (3) Groups 7-12 transition metal oxides. These compns. are characterized by low pollutant emissions, low smoke formation, and adjustable burning rate.

ACCESSION NUMBER: 2000-824198 CAPLUS
 DOCUMENT NUMBER: 134:6642
 TITLE: Guanyl urea dinitramide-based solid propellants with adjustable burning rate for vehicle airbag inflation
 INVENTOR(S): Persson, Svante; Sjögqvist, Conny
 PATENT ASSIGNEE(S): Bofors Bepab AB, Swed.
 SOURCE: PCT Int. Appl., 26 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000069792	A1	20001123	WO 2000-SE864	20000504
W: JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
SE 9901726	A	20001113	SE 1999-1726	19990512
SE 514336	C2	20010212		
EP 1194392	A1	20020410	EP 2000-930020	20000504
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: SE 1999-1726 A 19990512
 WO 2000-SE864 W 20000504

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 107 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Particles of moisture-sensitive propellants and explosives, as well as oxidants (esp. ammonium dinitramide and/or ammonium nitrate), are microencapsulated in a two-step process consisting of: (1) coating the particles, under exclusion of moisture, with a wax-like material, and (2) coating and microencapsulation of the wax-coated particle with an aq. soln. of an amino resin prepolymer, which is then polynd. The wax-like material is typically a paraffin wax or a polyethylene glycol wax. The amino resins are typically aminoplasts, such as melamine-formaldehyde, urea-formaldehyde, and formaldehyde-melamine-urea prepolymers.

ACCESSION NUMBER: 2000-822564 CAPLUS
 DOCUMENT NUMBER: 134:6640
 TITLE: Procedure for microencapsulating particles from driving and explosives and in this procedure manufactured particle
 INVENTOR(S): Teipel, Ulrich; Heintz, Thomas
 PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft zur Förderung der Angewandten
 FORSCHUNG eV, Germany
 SOURCE: Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19923202	A1	20001123	DE 1999-19923202	19990520

PRIORITY APPLN. INFO.: DE 1999-19923202 19990520
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 108 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Prills of ammonium dinitramide are prep'd. by melting the salt with a stabilizer and, by a dry nitrogen pressure, injecting the molten salt into an inert, perfluorinated carrier liq. of a greater d. which, initially, is above the solidification temp. of the salt. The molten salt and carrier liq. pass together in turbulent flow through a heated conduit in which stationary vanes disperse the salt into droplets. The liq. and salt then pass in a turbulent flow through a cooled conduit for solidification of the salt into prills without agglomeration. The prills are then sep'd. from the liq. by flotation and any liq. carried with the prills recycled. The main flow of carrier liq. is pumped through a preheater and then back to the molten salt injector. The cooled conduit is provided with compression refrigeration, the refrigerant passing in parallel flow along the conduit and the compressed refrigerant passing to the preheater before condensation.

ACCESSION NUMBER: 2000-754370 CAPLUS
 DOCUMENT NUMBER: 133:323665
 TITLE: Apparatus for prilling an oxidizing salt of ammonia
 INVENTOR(S): Wood, Stanley E.; Weinhardt, Robert A.
 PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
 SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6135746	A	20001024	US 1998-137864	19980807

PRIORITY APPLN. INFO.: US 1998-137864 19980807
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 109 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The efficiency of the development of energetic materials can be increased by modeling the stability, compatibility, ageing and thermal decomprn. of the used components and formulations. All four terms have in common that chem. reactions are the dominating processes besides for example migration of mobile components. These chem. reactions are only in part controlled by thermodyn., to a great extend they are controlled kinetically. Kinetic models are formulated and used for mass loss measurements with isothermal ovens and with TGA (thermo gravimetric anal.) and isothermal and adiabatic heat generation rate for decomprn. and bimol. reaction. Advantages and disadvantages of these methods in assessing the stability, the ageing and the thermal decomprn. are discussed. The models on mass loss and heat generation rate include autocatalytic decomprn. and evapn. of volatile ingredients. Approxns. and simplifications of the autocatalytic models are discussed. The application of models to describe the thermal decomprn. and the ageing of substances include ADN, CL20, GAP, and energetic plasticizers as Me/St-NENA, EGBAA (A17), GAPA, DANPE. The kinetic data for their decomprn. are given.
 ACCESSION NUMBER: 2000:714051 CAPLUS
 DOCUMENT NUMBER: 133:298429
 TITLE: Modelling of the stability, ageing and thermal decomposition of energetic components and formulations
 AUTHOR(S): Bohn, Manfred A.
 CORPORATE SOURCE: Fraunhofer-Institut für Chemische Technologie (ICT), Pfinztal-Bergzhausen, D-76318, Germany
 SOURCE: Proceedings of the International Pyrotechnics Seminar (2000), 27th, 751-770
 CODEN: PPVSD7; ISSN: 0270-1898
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 110 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 2000:695519 CAPLUS
 DOCUMENT NUMBER: 134:200355
 TITLE: The low-temperature photochemistry of biguanidinium dinitramide single crystals: An EPR investigation
 AUTHOR(S): Weinschenk, Matthew Francis
 CORPORATE SOURCE: Yale Univ., USA
 SOURCE: (1999) 508 pp. Avail.: UMI, Order No. DA9954399
 DOCUMENT TYPE: From: Diss. Abstr. Int., B 2000, 61(1), 276-277
 LANGUAGE: Dissertation
 English

L4 ANSWER 111 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Title only translated.
 ACCESSION NUMBER: 2000:692731 CAPLUS
 DOCUMENT NUMBER: 133:254586
 TITLE: Composition for fire extinguishing
 INVENTOR(S): Pak, Z. P.; Shishov, N. I.; Perepechenko, B. P.; Dubonos, V. G.; Gordeev, V. I.
 PATENT ASSIGNEE(S): Russia
 SOURCE: Russ. From: Izobreteniya 1998, (6), 177.
 CODEN: RUXXE7
 DOCUMENT TYPE: Patent
 LANGUAGE: Russian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2105581	C1	19980227	RU 1995-105353	19950407
PRIORITY APPN. INFO.: RU 1995-105353 19950407				

L4 ANSWER 112 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Gas-generating compns. esp. for use in inflation of vehicle occupant protection devices (i.e., automobile airbags) consist of an oxidizer, a binder, and guanylurea dinitramide fuel. Preferred compns. are guanylurea dinitramide 40-90, oxidizer 10-60, and binder 0-10 wt.%. The oxidizers are selected from ammonium nitrate, potassium nitrate, potassium perchlorate, ammonium perchlorate, metal oxides, and metal complexes.
 ACCESSION NUMBER: 2000:635193 CAPLUS
 DOCUMENT NUMBER: 133:195583
 TITLE: Guanylurea dinitramide-based gas-generating compositions for inflation of vehicle airbags
 INVENTOR(S): Blomquist, Harold R.
 PATENT ASSIGNEE(S): TRW Inc., USA
 SOURCE: U.S., 9 pp., Cont.-in-part of U.S. Ser. No. 123,821.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6117255	A	20000912	US 1999-359248	19990722
US 6004410	A	19991221	US 1998-123821	19980728
DE 10034287	A1	20010222	DE 2000-10034287	20000714
DE 10034287	C2	20020711		
PRIORITY APPN. INFO.: US 1998-123821 A2 19980728				
US 1999-359248 A 19990722				
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT				

L4 ANSWER 113 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Cryst. energetic materials with improved stability and/or decreased sensitivity are prep'd. by crystn. with stirring at 15-75.degree. in the presence of ultrasound with frequency 10-100 kHz and amplitudes of 0.4-10 μ m. The energetic materials that can be prep'd. in this manner are explosives and high-energy oxidizers, esp. hydrazinium nitroformate, CL-20, ADN, AP, RDX, HMX, and PETN.

ACCESSION NUMBER: 2000:626476 CAPLUS

DOCUMENT NUMBER: 133:195590

TITLE: Crystallization of explosives and high-energy

oxidizers in presence of ultrasound

INVENTOR(S): Weltmans, Wilhelmina H. M.; Wierckx, Franciscus J. M.

PATENT ASSIGNEE(S): Aerospace Propulsion Products B.V., Neth.

SOURCE: Eur. Pat. Appl., 13 pp.

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1033357	A1	20000906	EP 1999-200592	19990302
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
NO 2000001017	A	20000904	NO 2000-1017	20000229

PRIORITY APPLN. INFO.: EP 1999-200592 A 19990302
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 114 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Stabilizers for ammonium dinitramide oxidant (i.e., in energetic formulations) consist of six-membered-ring arom.-contg. heterocyclic org. compds., which are present at a 0.001-5 (preferably 0.1-1) wt.% concn. The stabilizers are typically arom. nitrogen-contg. heterocyclic org. compds., esp. pyridines, pyrimidines, pyrazines, and triazines substituted

with amino, hydroxy, or other activating groups. Preferred stabilizers are 7-(2,3-dihydroxypropyl)theophylline, 2,4,6-triaminopyrimidine, 2,2'-dipyridylamine, and riboflavin. The compns. can also include an indicator in which the disappearance of a blue-violet color signifies the loss of stabilizers with accelerated degrdn. of the ammonium dinitramide.

ACCESSION NUMBER: 2000:623656 CAPLUS

DOCUMENT NUMBER: 133:179919

TITLE: Nitrogen-contg. heterocyclic compounds as potential stabilizers for ammonium dinitramide (ADN) oxidant in energetic formulations

INVENTOR(S): Ciaramitaro, David A.; Reed, Russell

PATENT ASSIGNEE(S): United States Dept. of the Navy, USA

SOURCE: U.S., 12 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6113712	A	20000905	US 1998-226616	19981222
PRIORITY APPLN. INFO.: US 1998-226616				
REFERENCE COUNT: 5				
THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILBLE IN THE RE				

FORMAT

L4 ANSWER 115 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Liq. monopropellants intended to substitute for hydrazine-based liq. propellants, consist of a soln. of a fuel, an optional solvent for the oxidizer or the fuel (which can be the fuel itself), and a dinitramide salt as the oxidizer. Suitable fuels include Cl-6-alcs. (mono, di, tri, and polyols), amino acids, carboxylic acids, ketones, amines (primary, secondary, or tertiary), formamides, aldehydes, and satd. liq. hydrocarbons; preferred fuels are N-methylpyrrolidone, glycine, acetone, MeOH, EtOH, and glycerol. A preferred compn. is ammonium dinitramide 61, water 26, and glycerol 13 wt%. The novel propellants are characterized by low toxicity, low flammability, high specific impulse, high-d., low-sensitivity, high ease of ignition, long-term stability in storage

(at up to 50.degree.), and can be used for spacecraft propulsion.

ACCESSION NUMBER: 2000:608691 CAPLUS

DOCUMENT NUMBER: 133:195581

TITLE: High-energy low-sensitivity liquid monopropellants

containing dinitramide salts as oxidizers

INVENTOR(S): Anflo, Kjell; Wingborg, Niklas

PATENT ASSIGNEE(S): Svenska Rymdaktiebolaget, Swed.

SOURCE: PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000050363	A1	20000831	WO 2000-SE358	20000223
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, N2, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, VN, VU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				

SE 9900715	A	20000827	SE 1999-715	19990226
SE 513930	C2	20001127		
BR 2000008548	A	20011106	BR 2000-8548	20000223
EP 1192215	A1	20020403	EP 2000-913204	20000223
EP 1192215	B1	20030618		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2002537218 T2 20021105 JP 2000-600948 20000223

AT 243177 E 20030715 AT 2000-913204 20000223

NO 2001004152 A 20010927 NO 2001-4152 20010827

PRIORITY APPLN. INFO.: SE 1999-715 A 19990226

WO 2000-SE358 W 20000223

OTHER SOURCE(S): MARPAT 133:195581

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 116 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Microencapsulation of particulate propellants and explosives leads to product improvements with respect to their further processing, stability, and their compatibility. In this work, chem. microencapsulation was proposed, in which liq.-phase sepn. of the wall material from the core material occurs. Suitable material pairs were: (1) ammonium dinitramide coated with Et cellulose, (2) ammonium dinitramide coated with cellulose esters, (3) CL-20 coated with cellulose esters, and (4) HMX coated with amionoplasts.

ACCESSION NUMBER: 2000:581230 CAPLUS

DOCUMENT NUMBER: 133:179874

TITLE: Coating of particulate energetic materials

AUTHOR(S): Heintz, T.; Teipel, U.

CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfingstal, D-76327, Germany

SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 120/1-120/12

PUBLISHER: CODEN: IACIEQ; ISSN: 0722-4087

DOCUMENT TYPE: Fraunhofer-Institut fuer Chemische Technologie

LANGUAGE: Journal

REFERENCE COUNT: German

THIS: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 117 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In the last years ammonium dinitramide, (ADN) is a promising new oxydator and a possible substitute for ammonium nitrate (AN) and esp. for the chlorinated oxidizer ammonium perchlorate. Advantages of ADN are the higher energy input combined with a reduced pressure for decompp. For judging the purity of the synthesized and/or treated or aged pure or formulated ADN the estd. AN content was taken into account. AN is known as a byproduct of the ADN synthesis as well as a possible decompp. product of ADN. A suitable ion chromatog. method was developed for the direct anal. of DN anions. Different ion exchanger phases were tested with org. and/or inorg. eluents. The ionic strength and flow rate of the eluent was improved to get an acceptable resoln. for nitrite and nitrate combined with a short run time for the whole anal. Detection was realized by elec. cond. or UV absorption whereby the measurement wave lengths were optimized in order to get a small signal to noise ratio and simultaneously a suitable sensitivity esp. for NO₂ and NO₃. Under improved conditions (ion Pac 11, 1 ml/min NaOH, 300 mmol) detection limits of 0.05-0.01 ppm were realized for NO₃ and NO₂, resp., measured at 214 nm. Linearity range for the anal. of DN (285 nm) was found to be very broad (.1toreq.700 ppm). All 3 anions can be analyzed in one run taking maximal 30 min.
 ACCESSION NUMBER: 2000:581188 CAPLUS
 DOCUMENT NUMBER: 133:179871
 TITLE: Chromatographic determination of dinitramide anions
 in
 the presence of nitrate
 AUTHOR(S): Bunte, G.; Neumann, H.; Krause, H.
 CORPORATE SOURCE: H. Fraunhofer-Institut fuer Chemische Technologie (ICT), Pfinztal, D-76327, Germany
 SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 92/1-92/10
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 119 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Based on exptl. measurements and anal. literary data, the enthalpies of formation were calcd. for primary and secondary nitramines, esp. nitramine radicals, in order to obtain the bond dissociation energies for C-H, C-C, C-N, N-H, and N-N. The contributions of the nitramine groups in the enthalpies of gas-phase formation and in the enthalpies of atomization were detd. Finally, the efficient energies of interaction of nitramine groups in polynitroamines are calcd.
 ACCESSION NUMBER: 2000:581061 CAPLUS
 DOCUMENT NUMBER: 133:283739
 TITLE: The energies of bond dissociation and efficient interaction energies in nitramines
 AUTHOR(S): Kostikova, L. M.; Miroshnichenko, E. A.; Matyushin, Y.
 N.
 CORPORATE SOURCE: Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, 117977, Russia
 SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 50/1-50/11
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 118 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The results of exptl. investigations on impact sensitivity of binary oxidizer-fuel compns. as a functions of fuel caloricity and oxidizer chem. activity are presented. The sensitivities of all investigating compns. increase when caloricity of fuels increase. Max. of compn. sensitivities depends poorly on Physicochem. nature of oxidizers.
 ACCESSION NUMBER: 2000:581140 CAPLUS
 DOCUMENT NUMBER: 133:298391
 TITLE: The effect of fuel's caloricity on impact sensitiveness of binary oxidizer-fuel compositions
 AUTHOR(S): Tselikin, V. A.; Dubovik, A. V.
 CORPORATE SOURCE: Semenov Institute of Chemical Physics RAS, Moscow, 117977, Russia
 SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 74/1-74/4
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 120 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Salts of dinitramide (HN(NO₂)₂) were prepd. by reaction of dinitramide or ammonium dinitramide with amines, and evaluated with respect to thermal stability, susceptibility to hydrolysis, and sensitivity to mech. stimulus. Because some of the salts showed good or satisfactory thermal stability and low susceptibility to hydrolysis, they should have use as explosives or components of energetic mixts. The tetrakis(nitramide) of triethylenetetramine was stable to hydrolysis and had an explosive strength comparable to that of RDX. Ethylenediamine bis(dinitramide) showed similar properties. Some salts also have application in crosslinking or plasticizing composite explosives.
 ACCESSION NUMBER: 2000:581018 CAPLUS
 DOCUMENT NUMBER: 133:283737
 TITLE: Synthesis and properties of salts of dinitroamide (DNA) with various amines
 AUTHOR(S): Boniuk, Henryka; Clesowska-Glinska, Iwona; Syczewski,
 Michal
 CORPORATE SOURCE: Division of High-Energetic Materials, Faculty of Chemistry, Warsaw University of Technology (Politechnika), Warsaw, 00-664, Pol.
 SOURCE: International Annual Conference of ICT (2000), 31st(Energetic Materials), 39/1-39/9
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 121 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The biodegrdn. of one popular nitramine energetics, ammonium dinitramide (ADN) by mixt. of denitrifying bacterial species was investigated. ADN was obad. to be effectively mineralized in the anaerobic mixed culture. The initial ADN concn. of 250 mg/L was reduced to non-detectable levels (> 99% removal efficiency) in 5 days of incubation under anaerobic conditions. Final products generated from anaerobic degrdn. of nitramine energetics by anaerobic metab. were NH4+, CH4, and CO2 that were released to the environment with the denitrifiers' growth. In addn., it was found that the activity of denitrifiers was inhibited by high concn. of ammonia generated through the degrdn. reactions of energetic nitrites.

ACCESSION NUMBER: 2000:579285 CAPLUS
 DOCUMENT NUMBER: 133:167831
 TITLE: Degradation of ammonium dinitramide (ADN) in digested sewage sludge under strict anaerobic conditions
 AUTHOR(S): Kwon, Sung-Hyun
 CORPORATE SOURCE: R & D Center for Environment, Safety & Health, LG Corp. Institute of Technology, Seoul, 120-749, S. Korea
 SOURCE: Toxicological and Environmental Chemistry (2000), 75(1-2), 35-42
 PUBLISHER: Gordon & Breach Science Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 122 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The biodegrdn. of two popular nitramine energetics were investigated. The HDX (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine) was mineralized by anaerobic mixed denitrifiers in digested sewage sludge culture. An initial HMX concn. of 120 mg/L decreased to a non-detectable level (> 99% removal efficiency) in 8 days of incubation under strict anaerobic conditions. It was, however, not effectively metabolized by single denitrifying species, *P. aeruginosa*, *B. subtilis* in a nitrogen limiting condition under their optimum growth conditions. The other nitramine energetic, ADN (ammonium dinitramide), was mineralized well in the anaerobic mixed culture. The initial ADN concn. of 250 mg/L was reduced to non-detectable levels (> 99% removal efficiency) in 5 days of incubation under anaerobic conditions. These results show that the anaerobic mixed culture, compared to the pure monoculture, is superior in the degrdn. of nitramine energetics.

ACCESSION NUMBER: 2000:579284 CAPLUS
 DOCUMENT NUMBER: 133:167830
 TITLE: Comparison of metabolic nitramine degradation by denitrifying species
 AUTHOR(S): Kwon, Sung-Hyun
 CORPORATE SOURCE: R & D Center for Environment Safety and Health, LG Corp. Inst. of Technology, Seoul, 120-749, S. Korea
 SOURCE: Toxicological and Environmental Chemistry (2000), 75(1-2), 25-34
 PUBLISHER: Gordon & Breach Science Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 123 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompr. mechanism and primary stage of potassium dinitramide (KDN) was investigated including kinetic parameters under conditions close to the combustion regime. The expts. were performed at a linear heating rate of 10 degree./min under several elevated pressure conditions. The decompr. of solid KDN is complex, depending on storing time, grain size, and refinement. The influence of pressure on the solid KDN decompr. is interpreted by the forming mechanism of N2O and KNO3. The decompr. characteristics of liq. KDN show a 2-stage profile and a distinct influence of pressure. The first-stage decompr. includes a N-N cleavage resulting in a biradical and NO2 with escape of the NO2. The second-stage decompr. produces a free radical [O] from the biradical, forming KNO3 from KNO2 and [O]. 10 Wt.% KDN in ammonium nitrate (AN) eliminates the disadvantageous crystal transition phase IV. fudarw. phase III of AN. The transition results in an irreversible increase in the crystal vol. showing an increase in probity and a loss of mech. strength. Therefore, KDN is ideal as phase-stabilizer for AN.

ACCESSION NUMBER: 2000:567139 CAPLUS
 DOCUMENT NUMBER: 134:6618
 TITLE: Thermal decomposition of potassium dinitramide at elevated pressure
 AUTHOR(S): Yin, Cuimei; Liu, Ziru; Kong, Yanghui; Zhao, Fengqi; Wang, Yuan; Lei, Ming; Luo, Yang; Zhang, Pei; Shao, Yinghui; Li, Shangwen
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, Peop. Rep. China
 SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 425-437
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 124 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The probing mass spectrometry procedure is shown to be an indispensable method providing important information on solid rocket propellant chem. combustion mechanism, by the study of the flame structure of AP, RDX, HMX, and ADN, propellants based on these, and double-based propellants. Although it is limited to some extent by pressure, flame zone width, and other considerations, the results obtained with its aid have successfully been used to understand the chem. reaction mechanisms of the solid propellant combustion and develop combustion models. The further application of the method and other spectroscopic and thermocouple methods allow a refined and widened understanding of the solid propellant combustion mechanism.

ACCESSION NUMBER: 2000:567135 CAPLUS
 DOCUMENT NUMBER: 133:234556
 TITLE: Flame structure of solid propellants
 AUTHOR(S): Korobeinichev, Oleg P.
 CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, Russia
 SOURCE: Progress in Astronautics and Aeronautics (2000), 185(Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 333-354
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 125 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 30 refs., of the discovery, synthesis, and characterization of dinitramide acid (HN_3O_4 or nitronitramide) and dinitramide salts, with emphasis on first appearance in the literature, synthetic methods (typically by base-catalyzed cleavage), structure and properties (e.g., intramol. hydrogen bonding), chem. properties, and reactions.
 ACCESSION NUMBER: 2000:567131 CAPLUS
 DOCUMENT NUMBER: 133:254549
 TITLE: Synthesis and characterization of dinitramide acid and its salts
 AUTHOR(S): Luk'yanov, Oleg A.; Tartakovskiy, Vladimir A.
 CORPORATE SOURCE: Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, Russia
 SOURCE: Progress in Astronautics and Aeronautics (2000), 185 (Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 207-220
 CODEN: PAEAA9; ISSN: 0079-6050
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 126 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 41 refs., of the development in solid propellant formulations, esp. in relation to development high-performance insensitive munitions and for redn. of pollutants. Topics discussed include a background and exptl. results for high performance, insensitivity, and pollution prevention; development of oxidizers and high-d. energetic components; hydrolyzable energetic and non-energetic binders; and energetic thermoplastic elastomers.
 ACCESSION NUMBER: 2000:567130 CAPLUS
 DOCUMENT NUMBER: 133:240246
 TITLE: Advances in solid propellant formulations
 AUTHOR(S): Chan, May L.; Reed, Russ Jr.; Ciaramitaro, David A.
 CORPORATE SOURCE: Naval Air Warfare Center, China Lake, CA, 93555, USA
 SOURCE: Progress in Astronautics and Aeronautics (2000), 185 (Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 185-206
 CODEN: PAEAA9; ISSN: 0079-6050
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English
 REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 127 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Recent theor. and exptl. studies were exmd. for reactions of [C, H, N, O] systems related to the combustion of nitramines, esp. ammonium dinitramide, RDX, and HMX, with emphasis on kinetics and mechanisms for barrier-less radical-radical assocn. processes and subsequent reactions of excited assocn. products. Most theor. results related to the RDX-HMX system are based on G2M (modified Gaussian-2) potential energy profiles. A canonical variational RRKM approach was also used in conjunction with the G2M potential energy profiles, also in combination with mol. parameters predicted by the hybrid d. functional method, in order to obtain kinetic rate consts. for exothermic radical-radical reactions that have not been easily measured exptl. Several overall rate consts. and product branching ratios were accurately predicted.
 ACCESSION NUMBER: 2000:567125 CAPLUS
 DOCUMENT NUMBER: 133:254582
 TITLE: Gas-phase chemical kinetics of [C, H, N, O] systems relevant to combustion of nitramines
 AUTHOR(S): Chakraborty, D.; Lin, M. C.
 CORPORATE SOURCE: Emory University, Atlanta, GA, USA
 SOURCE: Progress in Astronautics and Aeronautics (2000), 185 (Solid Propellant Chemistry, Combustion, and Motor Interior Ballistics), 33-71
 CODEN: PAEAA9; ISSN: 0079-6050
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 107 THERE ARE 107 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 128 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Prodn. of ADN prills includes (1) melting and dispersion of ADN in an apolar medium to obtain ADN drops, (2) cooling of the medium for solidification of the drops to form the prills, and (3) sepn. of the prills from the medium. The resulting ADN prills are suitable as an oxidn. agent which is compatible for blending with polymer systems.
 ACCESSION NUMBER: 2000:531855 CAPLUS
 DOCUMENT NUMBER: 133:106981
 TITLE: Production of ammonium dinitramide (ADN) prills suitable for use in polymer systems
 INVENTOR(S): Langlet, Abraham; Johansson, Martin
 PATENT ASSIGNEE(S): Foervarrets Forskningsanstalt, Swed.
 SOURCE: Swed., 4 pp.
 CODEN: SSXXAY
 DOCUMENT TYPE: Patent
 LANGUAGE: Swedish
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 512394	C2	20000313	SE 1999-813	19990308
SE 9900813	A	19990429		
PRIORITY APPLN. INFO.:			SE 1999-813	19990308

L4 ANSWER 129 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Prod'n. of ADN prills includes (1) melting and dispersion of ADN in an apolar medium to obtain ADN drops, (2) cooling of the medium for solidification of the drops to form prills, and (3) sepn. of the prills from the medium. Dispersion is carried out by using ultrasound.

Particle size of the prills is <40 μm. The ADN prills are suitable as an oxidn. agent.

ACCESSION NUMBER: 2000:531854 CAPLUS

DOCUMENT NUMBER: 133:106980

TITLE: Production of ammonium dinitramide (ADN) prills by using ultrasound

INVENTOR(S): Langlet, Abraham; Johansson, Martin

PATENT ASSIGNEE(S): Foervarrets Forskningsanstalt, Swed.

SOURCE: Swed., 5 pp.

CODEN: SSXXAY

DOCUMENT TYPE: Patent

LANGUAGE: Swedish

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SE 512395	C2	20000313	SE 1999-814	19990308
SE 9900814	A	19990429		

PRIORITY APPLN. INFO.: SE 1999-814 19990308

L4 ANSWER 130 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The fabrication of gas-actuated car safety devices, from which the chems. have been recovered when the device's normal service life has expired, uses a mixt. of guanidine dinitramide and guanylurea dinitramide as the gas-generating compn., which is recovered by low-temp. crystn. from water.

The mixts. contain >50 wt.% guanidine dinitramide. Such gas-actuated safety devices include air bags, safety-belt tighteners, inflatable neck supports, etc.

ACCESSION NUMBER: 2000:475613 CAPLUS

DOCUMENT NUMBER: 133:76163

TITLE: Guanidine dinitramide-guanylurea dinitramide mixture for actuation of vehicle safety devices

INVENTOR(S): Bjørbæk, Per

PATENT ASSIGNEE(S): Nexplo Bofors AB, Swed.

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000040523	A1	20000713	WO 1999-SE2496	19991229

W: US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

SE 9804611 A 20000701 SE 1998-4611 19981230

SE 513315 C2 20000821 SE 1998-4611 A 19981230

EP 1171403 A1 20020116 EP 1999-965701 19991229

EP 1171403 B1 20030416

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

AT 237567 E 20030515 AT 1999-965701 19991229

PRIORITY APPLN. INFO.: SE 1998-4611 A 19981230
WO 1999-SE2496 W 19991229

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 131 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Kinetic consts. of decompr. were detd. for ADN and prilled ADN by DSC and TG. Pressure DSC at 550 psi air or helium had similar kinetic consts.

for prilled ADN, namely 29 kcal/mol activation energy and a log frequency factor of .apprx. 14.0 min-1. These values were similar to those found in sealed sample pans in which the decompr. gases were confined. DSC and TG runs in open sample pans in nitrogen or helium had higher activation energies and frequency factors, namely 40-43 kcal/mol and 18-20 min-1, resp. Thus, it appears that confinement of the ADN decompr. gases either under pressurization or a sealed environment accelerates the decompr. of prilled ADN. Kinetics of decompr. of unprilled ADN at atm. pressure in nitrogen or helium by DSC and TG were Ea = 37 kcal/mol and log A = 17 min-1. Unprilled ADN had lower activation energies and frequency factor for decompr. than prilled ADN which contained stabilizers. The effect of sample containment (i.e. aluminum, coated aluminum, gold, and glass ampoules) on the shape of the DSC curve of ADN was investigated. Isothermal TG in vacuum of ADN in the 45-75 degree. region and the DSC anal. of the TG residues showed unusual results in the 60-degree. region. The rate and enthalpy of decompr. of four dinitramide salts and their dielec. relaxation were related to the basicity of the cation.

ACCESSION NUMBER: 2000:453527 CAPLUS

DOCUMENT NUMBER: 133:76145

TITLE: Thermal analysis of ammonium dinitramide (ADN)

AUTHOR(S): Tompa, A. S.

CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA

SOURCE: Thermochimica Acta (2000), 357-358, 177-193

CODEN: THACAS; ISSN: 0040-6031

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 132 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 GI



AB 1,3,5-Triazine reacted with N2O5 in MeNO2 followed by addn. of MeOH to give cis- and trans-trinitrotriazines I and II, resp. The crystal structures were detd. The mechanism of the reaction is also explored.

ACCESSION NUMBER: 2000:417313 CAPLUS

DOCUMENT NUMBER: 133:150525

TITLE: The nitration of 1,3,5-triazine with dinitrogen pentoxide

AUTHOR(S): Chafin, Andrew; Merwin, Lawrence

CORPORATE SOURCE: Materials Synthesis Branch Naval Air Warfare Center, Weapons Division, China Lake, CA, 93555, USA

Journal of Organic Chemistry (2000), 65(15),

SOURCE: 4743-4744

PUBLISHER: JOCEAH; ISSN: 0022-3263

American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 133:150525

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 133 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB High-nitrogen gas generating compns., useful for inflating passenger restraint gas inflator bags, contain, as a secondary oxidant, a nitrogen-rich coordination compnd. of general formula $(NM)UNX(M'w(NO_2)_z)$, in which: (1) NM is a nonmetal cation, (2) M is an alkali metal or alk. earth metal ion, (3) M' is a Group 4-12 coordination (transition) metal, (4) u = 1-4, x = 0-3, and z = 4 or 6 nitrito or nitro groups, depending on the stoichiometry of NM and M'. The nonmetal (NM) is selected from ammonia, hydrazine, hydroxylamine, and linear and cyclic amines (e.g., guanidine and guanidine derivs., tetrazole derivs., and aminofurazans). The gas-generating compns. generate relatively more gas and less solids, and are safer than azide-based gas-generating compns. Novel methods for the synthesis of nonmetal coordination complexes (e.g., with guanidine and hydrazine) were also presented.

ACCESSION NUMBER: 2000:415431 CAPLUS

DOCUMENT NUMBER: 133:60964

TITLE: High-nitrogen transition metal nitro or nitrito complexes in non-azide propellants for inflation of vehicle airbags

INVENTOR(S): Lundstrom, Norman H.; Begin, Laurence C.

PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA

SOURCE: U.S., 12 pp.

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6077371	A	20000620	US 1997-797398	19970210
WO 9836938	A2	19980827	WO 1998-US1750	19980129
WO 9836938	A3	19990325		
	W: CA, JP, KR RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,			
EP 964843	A2	19991222	EP 1998-911364	19980129
R: DE, FR, GB JP 2002508732	T2	20020319	JP 1998-536643	19980129
PRIORITY APPLN. INFO.:			US 1997-797398	A 19970210
			WO 1998-US1750	W 19980129

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 135 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Detonation velocities of confined cylinders of melt-cast ADN/ZnO (99.5/0.5 by wt.), ammonium dinitramide (ADN)/nano-diamond/ZnO (92.4/7.2/0.4), ADN/AN/ZnO (95.5/4.0/0.5) and ADN/AN/ZnO/nano-diamond (88.4/0.5/0.5/7.0) were measured using a streak camera. Velocities ranging between 3.9-4.5 mm./mu.s were obtained for 1.3 cm diam. samples confined by steel and a 2.5 cm diam. ADN/AN/ZnO cylinder. In one of the samples the detonation was failing as it proceeded through the charge. For the other shots reported, the shock velocities appeared to be steady through the last half of the charge, though the lengths were too short for any definitive statement about the failure diam. to be made.

ACCESSION NUMBER: 2000:390166 CAPLUS

DOCUMENT NUMBER: 133:19630

TITLE: Detonation velocity of melt-cast ADN and ADN/nano-diamond cylinders

AUTHOR(S): Doherty, R. M.; Forbes, J. W.; Lawrence, G. W.; Deiter, J. S.; Baker, R. N.; Ashwell, K. D.; Sutherland, G. T.

CORPORATE SOURCE: Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA

SOURCE: AIP Conference Proceedings (2000), 505(Shock Compression of Condensed Matter, Pt. 2), 833-836

CODEN: APCPCC; ISSN: 0094-243X

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 134 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 26 refs., of the influence of mol. structure on the stability and decompn. kinetics of high-energy compds. Both monofunctional compds. and compds. with mixed functional groups were used.

The sites of primary decompn. were detd. and the mutual influence of functional groups on compd. stability were taken into account.

ACCESSION NUMBER: 2000:412572 CAPLUS

DOCUMENT NUMBER: 133:76138

TITLE: Thermal stability of high-energy compounds
AUTHOR(S): Nazin, G. M.; Prokudin, V. G.; Manelis, G. B.
CORPORATE SOURCE: Institute of Problems of Chemical Physics, Russian Academy of Sciences, Chernogolovka, 142432, Russia

SOURCE: Russian Chemical Bulletin [Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya] (2000), 49(2), 234-237

CODEN: RCBUEY; ISSN: 1066-5285

PUBLISHER: Consultants Bureau

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

FORMAT

L4 ANSWER 136 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN

AB Prills are prep'd. by melting a salt and introducing the molten salt into carrier liq. Oxidizing salts of ammonia, ammonium nitrate (AN) and ammonium dinitramide (ADN) are melted with a stabilizer and introduced by dry nitrogen pressure into an inert, perfluorinated carrier liq. of greater sp. gr. than the molten salts. In a first embodiment, the carrier

liq. is quiescent and below the salt solidification temp. so that prills solidify from drops of the salt rising through a column which substantially retains the liq. In a second and continuous embodiment,

the carrier liq. is initially above the solidification temp., and the salt is injected into the moving liq. which passes with the molten salt in turbulent flow through a heated conduit, in which stationary vanes disperse the salt into droplets, and then through a cooled conduit for solidification of the salt into prills without agglomeration. In the both

embodiments, the prills may be sep'd. from the liq. by flotation and any liq. carried with the prills recycled. In the continuous embodiment, the main flow of carrier liq. is pumped through a preheater and then back to the molten salt injector.

ACCESSION NUMBER: 2000:388496 CAPLUS

DOCUMENT NUMBER: 133:6485

TITLE: Prilling by introduction of a molten liquid into a carrier liquid

INVENTOR(S): Wood, Stanley E.; Weinhardt, Robert A.

PATENT ASSIGNEE(S): United States of America, Secretary of the Navy, USA

SOURCE: U.S., 10 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6074581	A	20000613	US 1998-140062	19980824
PRIORITY APPLN. INFO.:			US 1998-140062	19980824
REFERENCE COUNT:	2		THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE	

FORMAT

L4 ANSWER 137 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The described process aims to produce spherical ammonium dinitramide (ADN)
 particles of different sizes with a narrow particle size distribution. The crystn. process presented in this paper consists of two stages. In the first stage, molten ADN is dispersed in a continuous phase in which ADN is insol. The droplet size produced can be controlled by varying the amt. of mech. energy supplied to the two-phase system. In addn. to discussing the influence of the different process parameters, such as dispersing rate, dispersion power, emulsification time, etc. this paper also reports the influence of emulsifying agents and the rheol. behavior of the continuous phase. In the second stage of the process, crystn. of the emulsified ADN droplets to spherical, solid particles is obtained by reducing the temp. of the system. The process described enables prodn. of spherical ammonium dinitramide particles with mean sizes from 10-600 .mu.m. The product quality of the crystd. ADN, which is also discussed in this paper, was detd. by using various anal. techniques, including differential scanning calorimetry (DSC), IR spectroscopy, ion chromatog., and laser light diffraction spectrometry.
 ACCESSION NUMBER: 2000:353864 CAPLUS
 DOCUMENT NUMBER: 132:336493
 TITLE: Crystallization of spherical ammonium dinitramide (ADN) particles
 AUTHOR(S): Teipel, Ulrich; Heintz, Thomas; Krause, Horst H.
 CORPORATE SOURCE: Brennhofen-Institut fur Chemische Technologie (ICT), Dfnttal, D-76318, Germany
 SOURCE: Propellants, Explosives, Pyrotechnics (2000), 25(2), 61-65
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 139 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Basic properties and spectroscopic data for the energetic oxidizer ADN (ammonium dinitramide (NH4N(NO2)2)) are presented. The ADN used for this work was synthesized by a new efficient and environmentally friendly method. The method is based on a direct nitration of salts of sulfamic acid by ordinary mixed acid, followed by neutralization and sepn. of the ADN by the use of an adsorption column. The heat of formation was measured by burning in hydrogen atm. in an adiabatic bomb calorimeter and was found to be 148 kJ/mol .+-. 10 kJ/mol. The m.p. was detd. using DSC technique and is 93.5.degree.. This paper reports drop wt., friction and bullet impact sensitivity data. The friction sensitivity of ADN is much lower than that of RDX. The impact sensitivity of ADN is of the same magnitude as that of RDX but varies a great deal with the morphol. of the particles, e.g. prilled ADN is nearly twice as insensitive as RDX. The bulk d. measured by powder X-ray diffraction and was found to be 1.82 g/cm3. ADN does not show any sign of phase transition in the -150 to +80.degree. temp. interval (measured by single crystal X-ray diffraction).
 FTIR and FT-Raman spectra are also presented. In the UV-VIS region, ADN is characterized by two absorption peaks at 214 and 284 nm. UV-VIS spectroscopy was also found to be the most useful method for quant. routine anal. of ADN.
 ACCESSION NUMBER: 2000:324508 CAPLUS
 DOCUMENT NUMBER: 132:310466
 TITLE: The properties of ammonium dinitramide (ADN): part 1, basic properties and spectroscopic data
 AUTHOR(S): Ostmark, H.; Benn, U.; Langlet, A.; Sanden, R.; Wingborg, N.
 CORPORATE SOURCE: Energetic Materials Department, FOA, Defence Research Establishment, Stockholm, S-172 90, Swed.
 SOURCE: Journal of Energetic Materials (2000), 18(2-3), 123-138
 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brozman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 138 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium dinitramide is stable high energetic oxidizer, with the monopropellant specific impulse of 2003.2 Ns/kg and the combustion temp. of 2100 K. Replacing ammonium perchlorate with ammonium dinitramide in HTPB propellant can increase specific impulse by 104.5 Ns/kg. The low signature propellant formed with GAP and ADN had a specific impulse of 2607 Ns/kg, and GAP/ADN/RDX propellant a specific impulse of 2630 Ns/kg.
 ACCESSION NUMBER: 2000:344835 CAPLUS
 DOCUMENT NUMBER: 133:6578
 TITLE: Energetic characteristic of ammonium dinitramide propellants
 AUTHOR(S): Liu, Jianhong; Tian, Deyu; Zhao, Yanhui; Pang, Aimin
 CORPORATE SOURCE: Normal School, Shenzhen University, Shenzhen, 518060, Peop. Rep. China
 SOURCE: Huozhayao Xuebao (2000), 23(2), 1-3
 PUBLISHER: Zhongguo Bingqi Gongye Di-204 Yanjiusuo
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 140 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The gas formation assoc'd. with the thermal decompn. of nineteen energetic materials was detd. at three temps. (120, 220 and 320.degree.). Although there was considerable variability within classes, among the largest producers of gas were the nitrate esters. PETN (pentaerythritol nitrate) generated apprx. 6.3 mol gas per mol., while nitrocellulose, produced almost no gas. Second in gas prodn. were the nitramines, followed by nitroarenes and lastly, energetic salts. NTO (5-nitro-2, 4-dihydro-3H-1, 2, 4-triazol-3-one), which does not fit into the four main classes of energetic materials, exhibited gas prodn. (2.13 mol gas per mol. NTO) comparable with some nitroarenes and the energetic salt, ammonium dinitramide (ADN). For selected compds. gas evolution data was used to construct first-order plots, from which Arrhenius parameters were detd. and compared with previously reported values.
 ACCESSION NUMBER: 2000:324507 CAPLUS
 DOCUMENT NUMBER: 132:310465
 TITLE: Gas production from thermal decomposition of explosives: assessing the thermal stabilities of energetic materials from gas production data
 AUTHOR(S): Oxley, J. C.; Smith, J. L.; Rogers, E.; Dong, X. X.
 CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, RI, 02881, USA
 SOURCE: Journal of Energetic Materials (2000), 18(2-3), 97-121
 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brozman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 141 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Initiation of a liq. in U- or V- shaped channels at fast compression of air cavity is described. Liq. energetic materials are divided in terms of the limiting pressure necessary for initiation into three main groups. The first of them includes very sensitive substances (NG, Methylnitrate, NGL, PEFO, ADN melt, etc.) which are able to explode in the range of initial driving pressures from 8-23 atm. Compds. of moderate sensitivity (TNT melt and DNT/Nitric Acid 70/30 soln.) are initiated in the range of 60-80 atm. At last, explosives of the third group assumed to be insensitive liqs. (NM, TNM, water-impregnated compds.) can not be ignited at the limiting pressure of the installation, approx. 100 atm. A theory of ignition at fast compression of gas inclusions is developed. It is shown particularly that self-sustaining burning of a liq. may develop only if rate of gas evolution stipulated by burning compensates a drop of pressure due to expansion of the gap. It is taken into account that at very high final pressure in the gap the strong compression of the liq.
 and expansion of the tube take place followed by the loss of energy and corresponding limiting pressure enhancement.

ACCESSION NUMBER: 2000:311785 CAPLUS
 DOCUMENT NUMBER: 132:310460
 TITLE: Modification of the model of initiation of a liquid in U-shaped tube

AUTHOR(S): Kondrikov, B. N.; Dorofeev, E. I.
 CORPORATE SOURCE: Mendeleev University of Chemical Technology, Moscow, Russia
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1999), 25th(7e Congres International de Pyrotechnie du "Groupe de Travail de Pyrotechnie", 1999, Vol. 1), 209-221
 CODEN: PPYSD7; ISSN: 0270-1898
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 142 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The combustion is studied of ammonium dinitramide (ADN)-contg. propellant compns. The combustion characteristics is sensitive to the granule microstructure. The combustion characteristics can be improved adjusting the microstructural properties of the granules. The effect of microstructure is not detected during std. measurement of the combustion rate that gives averaged values of the combustion rates. The effect of noise that disappears during averaging. The data that supplement std. method for measuring characteristics of propellant can be obtained by filming of the combustion of the propellant. The scattering of the combustion rate can be decreased and efficiency of the propellant can be increased by using ADN granules.

ACCESSION NUMBER: 2000:273918 CAPLUS
 DOCUMENT NUMBER: 132:281274
 TITLE: Study of combustion of energetic materials with propellant compositions containing granulated ADN
 AUTHOR(S): Ramesvami, A. O.
 CORPORATE SOURCE: Univ. Maryland, College Park, MD, USA
 SOURCE: Fizika Gorenija i Vzryva (2000), 36(1), 131-137
 CODEN: FGVAZ7; ISSN: 0430-6228
 PUBLISHER: Izdatel'stvo Sibirskogo Otdeleniya RAN
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 143 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A numerical anal. has been developed to study the detailed phys. and chem. processes involved in ADN combustion. The anal. is based on the conservation equations of mass, species concn. and energy for both condensed and gas phases, and takes into account finite-rate chem. kinetics and variable thermophys. properties. A chem. kinetics scheme, contg. totally 33 species and more than 180 reactions, has been established to investigate the gas-phase flame structure. The anal. has been applied to ADN self-deflagration at 6 atm with the measured surface compn. used as the boundary condition. Results show good agreement with exptl. data in terms of the temp. and species concn. profiles in the gas-phase flame. Sublimation and dissociation of ADN to NH₃, HN(NO₂)₂, N₂O, and HNO₃ are believed to be the major initial decompr. processes. However, surface conditions derived from these processes fail to model the measured gas-phase flame structure well if the kinetics scheme is employed.

ACCESSION NUMBER: 2000:256881 CAPLUS
 DOCUMENT NUMBER: 132:267204
 TITLE: Analysis of ammonium dinitramide (ADN) combustion with detailed chemistry
 AUTHOR(S): Liao, Y.-C.; Yang, V.; Lin, M. C.; Park, J.
 CORPORATE SOURCE: Los Alamos National Laboratory, Los Alamos, NM, 87545, USA
 SOURCE: CPIA Publication (1998), 685(JANNAF 35th Combustion Subcommittee and 17th Propulsion Systems Hazards Subcommittee Meeting, Joint Sessions, 1998), 13-30
 CODEN: CPPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 144 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A preliminary report was given on the development of propellants for insensitive munitions (IM) based on a low-cost polymer, hydroxy-terminated caprolactone ether (THF-oxirane block copolymer) (I). For high-energy propellants, dioctyl adipate (DOA) is the plasticizer of choice. I is available com. for <\$4.00/lb in 55-gal drums, compared with the DOA price of <\$1.50/lb in 55-gal drums. Comparisons were presented for various combinations of plasticizers and oxidizers, including burning rate data and mech. property data. I was crosslinked with di- and polyfunctional isocyanates. BunEHA was the plasticizer of choice.

ACCESSION NUMBER: 2000:242510 CAPLUS
 DOCUMENT NUMBER: 132:253200
 TITLE: Low cost binder for IM applications
 AUTHOR(S): Tzeng, D. D.; Jones, M. L.
 CORPORATE SOURCE: United Technologies/Space Propulsion, Chemical Systems
 SOURCE: CPIA Publication (1998), 675(1998 JANNAF Propulsion Meeting, Vol. 1), 97-99
 CODEN: CPPUDT; ISSN: 0272-5118
 PUBLISHER: Chemical Propulsion Information Agency
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 145 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal initiation by electron beam heating (and calibrated hot stage), of single crystals and prills of ADN, was filmed/recorded in an environmental scanning electron microscope, from the formation of microscopic "reaction sites" (0.01 .mu.m in diam.) to full crystal consumption. The transformations of the ADN prills and crystals were compared and recorded in real time at various magnifications (x10, 000-100) and under different atmospheres (pure nitrogen and nitrogen/water vapor mixts.). The initiation characteristics of the prills and crystals were found to differ and are related to the microstructural characteristics produced by different prill manufg. techniques namely, the "prilling tower" technique (Thiokol) and the "melt-stir" technique (CSD).
 ACCESSION NUMBER: 2000:154670 CAPLUS
 DOCUMENT NUMBER: 132:158367
 TITLE: Study of the thermal initiation of ammonium dinitramide (ADN) crystals and prills
 AUTHOR(S): Ramaswamy, Alba L.
 CORPORATE SOURCE: Dept. of Electrical Engineering, University of Maryland at College Park, MD, 20742, USA
 SOURCE: Journal of Energetic Materials (2000), 18(1), 39-60
 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 146 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review with 10 refs. of the advances in thermal decompn. of ammonium dinitramide (ADN) and combustion of ADN propellant with the emphasis on the thermal stability and thermal decompn. mechanism of ADN, combustion mechanism of ADN and ADN-contg. propellants. The ADN application prospect is also briefly discussed.
 ACCESSION NUMBER: 2000:148857 CAPLUS
 DOCUMENT NUMBER: 132:154029
 TITLE: Advances in study of thermal decomposition of ammonium dinitramide and combustion of ADN propellants
 AUTHOR(S): Zhao, Feng-qil; Yang, Dong; Cai, Bing-yuan; Li, Shang-wen
 CORPORATE SOURCE: Xi'an Modern Chem. Res. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Henneng Cailliao (1999), 7(4), 149-151
 CODEN: HACAFQ; ISSN: 1006-9941
 PUBLISHER: Henneng Cailliao Bianjibu
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Chinese

L4 ANSWER 147 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A new method was designed to synthesize ammonium dinitramide (ADN) from 3-aminopropionitrile. The product structure was identified and some properties were detd. (e.g., m.p. 90 to .apprx.92.degree.; decompn. point 252.degree.; d. 1.80 g/cm3; impact sensitivity, H50 (2 kg, 30 mg) 24 cm, friction sensitivity (66.degree., 2.45 MPa, 20 mg) 14%; and heat of combustion 517 kJ/mol). The condensation and second nitration were studied as the crit. steps of ADN synthesis.
 ACCESSION NUMBER: 2000:148855 CAPLUS
 DOCUMENT NUMBER: 132:154037
 TITLE: Synthesis and properties of ADN. (I)
 AUTHOR(S): Wang, Bo-zhou; Zhang, Zhi-zhong; Zhu, Chun-hua; He, Jiang-tao; Lei, Ming
 CORPORATE SOURCE: Xi'an Modern Chem. Res. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Henneng Cailliao (1999), 7(4), 145-148
 CODEN: HACAFQ; ISSN: 1006-9941
 PUBLISHER: Henneng Cailliao Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 148 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The synthesis and properties of a new class of inorg. salts, named pentafluorosulfanylnitramide salts (or pentafluorosulfanylnitraminic acid salts) [Z-SF5NNO2-], are described. A no. of SF5-nitramide salts (Z-SF5NNO2-) were successfully prepd. via nucleophilic displacements from carbamates and/or ion exchange techniques, but some salts [M(SF5NNO2)x; M = Li, Mg, Al] decompd. during isolation procedures and appear to be unstable in the solid state. Single-crystal x-ray diffraction was used to fully characterize the Z+SF5NNO2-, and their properties/structures are compared with those of the corresponding dinitramide salts (or dinitraminic acid salts), Z+N(NO2)2-. X-ray crystallog. revealed major structural differences between N(NO2)2- and SF5(NO2)- salts concerning the N-N distances and the angles subtended at the central N atom. In the N(NO2)2- salts, there are two nonequivalent N-N (av. length 1.372(2) and 1.354(2) .ANG.) distances and an av. N-N angle of 115.8(3).degree. (falls between sp3 and sp2 hybridization). In the SF5NO2- salts, the N-N distance is much shorter, 1.308(9) .ANG., and the av. N-N-S angle is 120.0(5).degree. (closely fits sp2 hybridization). The SF5NNO2- salts show a remarkable metrical similarity for the SF5 moiety in all structures, indicating a lack of sensitivity to its steric and electronic environment. This is in marked contrast to N(NO2)2-, where there is a wide variation in conformations adopted by these anions which can be related to their environment.
 ACCESSION NUMBER: 2000:118432 CAPLUS
 DOCUMENT NUMBER: 132:259620
 TITLE: Pentafluorosulfanylnitramide Salts
 AUTHOR(S): Sitzmann, Michael E.; Gilardi, Richard; Butcher, Ray J.; Koppen, William M.; Stern, Alfred G.; Thrasher, Joseph S.; Trivedi, Nirupan J.; Yeng, Zhen-Yu
 CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640, USA
 SOURCE: Inorganic Chemistry (2000), 39(4), 843-850
 CODEN: INOCAU; ISSN: 0020-1669
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 149 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The dependence of calcd. specific impulse of composite solid rocket fuels that contain aluminum hydride, oxidizers, and polymeric binders on the quantity of components, chem. compn., stand. enthalpy of formation, and d. of oxidizer and polymeric fuel-binder. High impulse of the composite solid rocket fuels with aluminum hydride can be obtained by using active binders that contain nitro, nitramino, and nitroester, and other oxygen contg. groups with high heat content. For existing oxidizers with aluminum hydride in the presence of active binders, higher specific impulse is obtained than the compns. with metallic aluminum. The use of various active binders depending on the chem. compn. and heat content can cause the variation of relative efficiency of the oxidizers. The use of composite oxidizers can lead to significant increase of energy compared to the use of single oxidizer.

ACCESSION NUMBER: 2000:88887 CAPLUS
 DOCUMENT NUMBER: 132:110167
 TITLE: Energetics of composite solid rocket fuels containing aluminum hydride
 AUTHOR(S): Lempert, D. B.; Soglasnova, S. I.; Nechiporenko, G.
 N. CORPORATE SOURCE: Inst. Probl. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
 SOURCE: Khimicheskaya Fizika (1999), 18(9), 88-96
 CODEN: KHFID9; ISSN: 0207-401X
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 150 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Once the burning rate as a function of initial temp. has been measured for a particular material, it is often desirable to report its burning rate temp. sensitivity as a single value that can then be used in other applications. A few of the obstacles encountered when making the detn. of burning rate temp. sensitivity, σ_p , are exmd. Burning rate temp. sensitivity was evaluated for the neat ingredients AP, HDX, RDX, ADN, CL-20, and HNF.

ACCESSION NUMBER: 2000:39195 CAPLUS
 DOCUMENT NUMBER: 132:66220
 TITLE: Burning rate of solid propellant ingredients, part 2: determination of burning rate temperature sensitivity
 AUTHOR(S): Atwood, A. I.; Boggs, T. L.; Curran, P. O.; Parr, T. P.; Hanson-Parr, D. M.; Price, C. F.; Wiknich, J.
 CORPORATE SOURCE: U.S. Naval Air Warfare Center, China Lake, CA, 93555, USA
 SOURCE: 748-752
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 151 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Burning rate data are presented with respect to initial temp. and pressure for three compds. that are currently used in propellant and explosive formulations. The dependence of burning rate on initial temp. and pressure is presented for ammonium perchlorate (AP), HMX, and RDX. Data for ingredients being considered for advanced propellants, such as CL-20, ammonium dinitramide (ADN), and hydrazinium nitroformate (HNF) are also presented and compared to the more traditional compds. These ingredients are all capable of self-deflagration, and their behavior often controls the behavior of the propellants in which they are the main ingredients.

ACCESSION NUMBER: 2000:39194 CAPLUS
 DOCUMENT NUMBER: 132:66219
 TITLE: Burning rate of solid propellant ingredients, part 1: pressure and initial temperature effects
 AUTHOR(S): Atwood, A. I.; Boggs, T. L.; Curran, P. O.; Parr, T. P.; Hanson-Parr, D. M.; Price, C. F.; Wiknich, J.
 CORPORATE SOURCE: U.S. Naval Air Warfare Center, China Lake, CA, 93555, USA
 SOURCE: Journal of Propulsion and Power (1999), 15(6), 740-747
 CODEN: JPOEL; ISSN: 0748-4658
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 152 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Similar UV/VIS/IR emission spectra were recorded when burning rocket propellant strands (RDX, RDX/testane, ADN) or pool fires of fuels and solvents (nitromethane, isoctane, isopropanol). Flame temps., reaction zone profiles, and state parameters of intermediate combustion radicals were detd. by anal. of band spectra of the emitting diat. species (OH, NH, CN) and quant. anal. of water emissions. Fast scanning spectrometers and analyzing tools developed to characterize rocket plumes and the burning zone of propellants for military purposes, can be applied successfully to investigate accident fires and explosions.

ACCESSION NUMBER: 2000:14583 CAPLUS
 DOCUMENT NUMBER: 132:66240
 TITLE: From rocket exhaust plume to fire hazards
 AUTHOR(S): Weiser, V.; Eisenreich, N.; Eckl, W.
 CORPORATE SOURCE: Fraunhofer-Institut für Chemische Technologie (ICT), Pfinztal, D-76318, Germany
 SOURCE: NATO Science Series, 1: Disarmament Technologies (1999), 26(Prevention of Hazardous Fires and Explosions), 61-76
 PUBLISHER: Kluwer Academic Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 153 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A gas generating compn. for an inflatable vehicle occupant protection device comprises an oxidizer, a fuel, and preferably a binder, in which the fuel is a dinitramide salt with general formula X-[N(NO₂)₂]_n, in which n > or = 1 and X is the cation of an org. compd. with gtoreq.1 tetravalent nitrogen atoms. The ammonium salt preferably has a m.p. > or = 125 degree. (esp. guanidinium dinitramide). A preferred oxidizer is phase-stabilized ammonium nitrate. The preferred compn. consists of < 80 wt.% oxidizer and has a burn rate of > 0.2 in./s at 13.8 MPa.
 ACCESSION NUMBER: 1999:808506 CAPLUS
 DOCUMENT NUMBER: 132:24485
 TITLE: Amine salts of dinitramide as gas generator compositions for inflatable vehicle occupant protection devices
 INVENTOR(S): Blomquist, Harold R.
 PATENT ASSIGNEE(S): TRW Inc., USA
 SOURCE: U.S., 9 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:
 PATENT NO. KIND DATE APPLICATION NO. DATE
 US 6004410 A 19991221 US 1998-123821 19980728
 US 6117255 A 20000912 US 1999-359248 19990722
 DE 19935187 A1 20000302 DE 1999-19935187 19990727
 PRIORITY APPLN. INFO.: US 1998-123821 A2 19980728
 OTHER SOURCE(S): MARPAT 132:24485
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 154 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The model-free and model-fitting kinetic approaches were applied to data for nonisothermal and isothermal thermal decompns. of HMX and ammonium dinitramide. The popular model-fitting approach gave excellent fits for both isothermal and nonisothermal data but yielded highly uncertain values of the Arrhenius parameters when applied to nonisothermal data. These values cannot be meaningfully compared with values derived from isothermal measurements, nor they can be used to reasonably predict the isothermal kinetics. On the other hand, the model-free approach represented by the isoconversional method yielded similar dependencies of the activation energy on the extent of conversion for isothermal and nonisothermal expts. The dependence derived from nonisothermal data gave reliable predictions of the isothermal kinetics. The use of the model-free approach was recommended as a trustworthy way of obtaining reliable and consistent kinetic information from both nonisothermal and isothermal data.
 ACCESSION NUMBER: 1999:795175 CAPLUS
 DOCUMENT NUMBER: 132:66216
 TITLE: Model-free and model-fitting approaches to kinetic analysis of isothermal and nonisothermal data
 AUTHOR(S): Vyazovkin, S.; Wight, C. A.
 CORPORATE SOURCE: Department of Chemistry, Center for Thermal Analysis, University of Utah, Salt Lake City, UT, 84112, USA
 SOURCE: Thermochimica Acta (1999), 340-341, 53-68
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 155 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB 4-Nitro- and 2,4-dinitrotoluenes reacted with tetranitro- and halotrinitromethanes in the presence of bases to give nitro-substituted 1,2-diphenylethanones and stilbenes. Thus, reaction of 4-O₂NCH₂Me with BrC₆N₃O₂ in THF contg. Me₃COK gave 5% 1,2-bis(4-nitrophenyl)ethane and 64% trans-4,4'-dinitrostilbene. Reaction of 2,4,6-trinitrotoluene with fluorotrinitromethane, N,N-dinitromethylamine, and tert-Bu and iso-Pr nitrates gave α , ω -2,4,6-trinitrotoluene; reaction with chlorotrinitromethane gave 2,4,6-trinitrobenzyl chloride.
 ACCESSION NUMBER: 1999:738033 CAPLUS
 DOCUMENT NUMBER: 132:122330
 TITLE: Radical ion reactions of carbanions derived from 4-nitro-, 2,4-dinitro-, and 2,4,6-trinitrotoluenes with polynitroalkanes
 AUTHOR(S): Makarevich, A. V.; Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.
 CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
 SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1999), 35(5), 684-692
 CODEN: RJOCFO; ISSN: 1070-4280
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 66 THERE ARE 66 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 156 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB To sep. ammonium dinitramide from the reaction mixt. obtained in the reaction between NO₂H₂O₇ and nitramine in acetonitrile and subsequent neutralization with NH₃aqua the following procedure was applied: sepn. of the solid pptd. during the reactions; evapn. of the acetonitrile soln.; extn. of the obtained solid with isopropanol; evapn. of the isopropanol soln.; and crystn. this way obtained crude ammonium dinitramide from Et acetate. According to the crude ammonium dinitramide concn. in the crystn. solvent, products with various compns. were obtained. For deta. concns. good yield and selectivity of the crystn. were attained. IR, TG, DTA, and elementary anal. exmnd. the selected products of the sepn. what allowed connecting the recorded spectra and thermographs with deta. purity of ammonium dinitramide samples.
 ACCESSION NUMBER: 1999:729252 CAPLUS
 DOCUMENT NUMBER: 131:339062
 TITLE: Separation of ammonium dinitramide from reaction mixture
 AUTHOR(S): Malecka, Monika; Skupinski, Wincenty; Jamroz, Michal
 CORPORATE SOURCE: Division of Highenergetics Materials, Faculty of Chemistry, Warsaw University of Technology (Politechnika) Warsaw, 00-664, Pol.
 SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(2), 83-89
 CODEN: PEPEYD5; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 157 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ab initio calcns. of the structures and energies of the mono-, di-, and trinitrosamides are compared to mono-, di-, and trinitramides. Highly accurate std. heats of formation of this series of nitramides and nitrosamides are calc'd. using isodesmic reactions and high-level theories.
 The nitrosamides have heats of formation at 0 K that are 20-40 kcal/mol higher than the analogous nitramides. The N-N bond strengths are comparable whether a NO or NO₂ group is bonded to the central nitrogen atom. The data suggest that converting the nitro groups to nitroso groups will result in compds. that have lower wt., shorter N-N bond lengths, and higher energy content, at the expense of lower oxygen balance. This suggests that nitrosamides are potentially useful high-energy materials. A revised .DEFLTA.Hf.degree. for NH₂NO₂ is proposed to be 3.8 kcal/mol at 0 K, in close agreement with previous theory and very different from exptl. Recommended values for .DEFLTA.Hf.degree. are 34 and 71 kcal/mol for di- and trinitramide, resp., and 22, 65, and 112 kcal/mol for mono-, di- and trinitrosamide, resp. The errors in the monosubstituted mols. are estd. at 1 kcal/mol, and the errors are estd. at +/- 2 and +/- 3 kcal/mol for the di- and trisubstituted mols., resp. Nitrosamides have bond strengths comparable to those of the nitramides.

ACCESSION NUMBER: 1999:726727 CAPLUS
 DOCUMENT NUMBER: 132:41193
 TITLE: Ab Initio Calculation of the Heats of Formation of Nitrosamides: Comparison with Nitramides
 AUTHOR(S): Chen, Zhi; Hamilton, Tracy P.
 CORPORATE SOURCE: Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL, 35294-1240, USA
 SOURCE: Journal of Physical Chemistry A (1999), 103(50), 11026-11033
 CODEN: JPCAFH; ISSN: 1089-5639
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 159 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The application of ADN for an effective oxidizer of propellants and explosives requires a detailed knowledge of the burning behavior. The phys. and chem. mechanisms of the combustion depend on pressure. Exp. profiles of temp. and species in the flame are important to design propellant formulation of high performance and low signature of the rocket plume. In the presented study, pure ADN and ADN/paraffin mixts. were investigated as strands in an optical bomb at pressures of 0.5-10 MPa. The application of non-intrusive combustion diagnostics for the investigation of fast burning energetic materials allowed the measurement of burning rates and profiles of temp. and gas components at various distances above the burning propellant surface. The burning rate was detd. by using a video system and a special frame anal. The acquisition and anal. of emission spectra in the UV/VIS allowed the investigation of rotational temps., the detn. of particle temps. and the identification of transient flame radicals. The vibrational temps. of final combustion products resulted from band spectra emitted in the near and mid IR spectral range. Burning rates of 5-70 mm/s were recorded showing a mesa/plateau-effect in the pressure range of 4-7 MPa. The UV/VIS spectra indicated an emission from OH, NH and CN radicals. The strong emission of OH bands of the ADN/paraffin mixt. allowed the investigation of rotational temps. with a mean value of 2700 K which is closely below the adiabatic flame temp. of 2950 K. Addnl., one-dimensional intensity profiles of the flame radicals were measured. As combustion end products H₂O, CO, CO₂ and NO were found. NO could only be detected at a distance up to 2 mm above the propellant surface. The measured CO/CO₂ fraction was higher as 10/1. Water could only be detected far above the propellant surface.

ACCESSION NUMBER: 1999:726254 CAPLUS
 DOCUMENT NUMBER: 131:339017
 TITLE: Burning behaviour of ADN formulations
 AUTHOR(S): Weiser, Volker; Eisenreich, Norbert; Baier, Andreas; Eckl, Wilhelm
 CORPORATE SOURCE: Fraunhofer-Institut fur Chemische Technologie (ICT), Pfingstal-Berghausen, D-76327, Germany
 SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(3), 163-167
 CODEN: PEPEYD; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 158 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The combustion rates are studied of ammonium dinitramide and its mixts. with various org. fuels. The dependence of the combustion rate of various dinitramide samples on the pressure, relative decrease of the combustion rate of the dinitramide in the presence of various fuels as a function of excess coeff. of the oxidizer (e.g., anthracene, succinic acid), regions of variation of the combustion rate of the dinitramide-fuel mixts. at various pressures and combustion rates of individual dinitramide, and the dependence of the combustion rates of dinitramide-fuel mixts. (2,4-dinitrophenol, diphenylamine, urotropin, anthracene, phenanthrene, m-dinitrobenzene, hydroquinone, resorcin, phthalic acid, adipic acid, succinic acid, and oxamide) on the combustion temp. are presented graphically and analyzed.

ACCESSION NUMBER: 1999:726632 CAPLUS
 DOCUMENT NUMBER: 131:312220
 TITLE: Combustion of ammonium dinitramide and its mixtures with organic fuels
 AUTHOR(S): Dinisuk, A. P.; Kuleshova, T. M.; Shepelev, Yu. G.
 CORPORATE SOURCE: Ross. Khim.-Tekhnol. Univ. im. D.I. Mendeleeva, Moscow, Russia
 SOURCE: Doklady Akademii Nauk (1999), 368(3), 350-353
 PUBLISHER: MAIK Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 160 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompn. products of five alkali metal dinitramides were examd. by mass spectral and x-ray diffraction anal. All five salt residues (Li, Na, K, Rb, and Cs) showed no evidence of the parent dinitramide by mass spectrometry and showed only the presence of metal nitrate adducts. X-ray diffraction patterns of the decay residues matched JCPDS ref. patterns and confirmed that the dinitramide salts thermally decompd. to their resp. alkali metal nitrate.

ACCESSION NUMBER: 1999:726226 CAPLUS
 DOCUMENT NUMBER: 131:353274
 TITLE: Evidence of nitrate formation from the thermal decay of alkali metal dinitramides
 AUTHOR(S): Cliff, Matthew D.; Smith, Matthew W.; Edwards, Darren P.
 CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory (AMRL)-DSTO, Salisbury, 5108, Australia
 SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(1), 43-45
 CODEN: PEPEYD; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 161 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Kinetics of the thermal decompr. of dinitramide (HDN) in aq. solns. and of NH₄N(NO₂)₂ (ADN) and KN(NO₂)₂ (KDN) in sulfuric acid, nitric acid and anhyd. acetic acid solns. was studied. The species N(NO₂)₂⁻, HN(NO₂)₂⁻ and H₂N(NO₂)₂⁺ were established to take part in the decompr. over a wide range of the medium acidity. Kinetic regularities of their thermal decompr. were detd. The role of the decompr. of dinitramide at the initial and self-acceleration stages of the decompr. of ADN was detd. The most likely mechanism of the decompr. of dinitramide, N(NO₂)₂⁻ and H₂N(NO₂)₂⁺ was proposed.

ACCESSION NUMBER: 1999:726225 CAPLUS
 DOCUMENT NUMBER: 131:339050
 TITLE: Kinetics and mechanism of thermal decomposition of dinitramide
 AUTHOR(S): Kazakov, Anatolii I.; Rubtsov, Yurii I.; Manelis, Georgii B.
 CORPORATE SOURCE: Institute of Chemical Physics Research, Russian Academy of Sciences, Chernogolovka, 142422 Russia
 SOURCE: Propellants, Explosives, Pyrotechnics (1999), 24(1), 37-42
 CODEN: PEPYD5; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH Verlag GmbH
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 163 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The 15N-NMR chem. shifts, δ , of 23 nitramines, were given and their relationships to detonation performance parameters were evaluated. A relationship was confirmed between the squares of detonation velocities or, as the case may be, the detonation heats, and the 15N-NMR chem. shift values of nitrogen atoms in the nitro group of the nitramines. This relationship was in a form of the Evans-Polanyi-Semenov equation and, as such, it directly specified the most reactive nitro group of nitramine mol. in the detonation and, hence, the N=NO₂ bond broken first in the detonation process.

ACCESSION NUMBER: 1999:713982 CAPLUS
 DOCUMENT NUMBER: 131:353273
 TITLE: Relationship between detonation characteristics and 15N NMR chemical shifts of nitramines
 AUTHOR(S): Zeman, Svatopluk
 CORPORATE SOURCE: Department of Theory and Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
 SOURCE: Journal of Energetic Materials (1999), 17(4), 305-330
 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 162 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The synthesis and properties of several new energetic 1,2,4,5-tetrazine derivs. are described. These include energetic salts of 3,6-dihydrazine-1,2,4,5-tetrazine and several sym. and unsym. substituted tetrazines with energetic substituents, in addn. to a new nitrotetrazine. ACCESSION NUMBER: 1999:713985 CAPLUS
 DOCUMENT NUMBER: 132:93294
 TITLE: 1,2,4,5-Tetrazine-based energetic materials
 AUTHOR(S): Chavez, David E.; Hiskey, Michael A.
 CORPORATE SOURCE: Group DX-2, High-Explosives Science and Technology, Los Alamos National Laboratory, Los Alamos, NM, 87545,
 USA
 SOURCE: Journal of Energetic Materials (1999), 17(4), 357-377
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 164 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Prepn. of uniformly shaped particles of meltable propellants and explosives as well as oxidizing agents, esp. ammonium dinitramide (ADN), consists of the following steps: (1) melting of the starting material, (2) emulsification of the melt into a matrix fluid, in which the material is insol. or only slightly sol., and (3) cooling of the emulsion to below the m.p. of the material, in which the dispersed droplets undergo recrystn. to solid particles. An oil, esp. a paraffin oil or a silicone oil, is used as the matrix fluid. Cooling of the emulsion can be carried out with the addn. of additives, crystn. initiators, or stabilizers and can be modified by mech. energy (e.g., stirring) or irradn. with ultrasound. The process can prep. uniformly shaped, esp. spherical, particles of propellant and explosives or oxidizing agents, with defined particle size, in which the diam. can be varied over a range from a few μm up to several mm.

ACCESSION NUMBER: 1999:684263 CAPLUS
 DOCUMENT NUMBER: 131:288481
 TITLE: Production of uniformly shaped and sized particles of meltable propellants, explosives, and oxidizing agents
 INVENTOR(S): Teipel, Ulrich; Leisinger, Karlfred; Krause, Horst; Heintz, Thomas
 PATENT ASSIGNEE(S): Fraunhofer-Gesellschaft zur Foerderung der Angewandten
 SOURCE: Forschung e.V., Germany
 Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19816853	A1	19991021	DE 1998-19816853	19980416
EP 953555	A1	19991103	EP 1999-105812	19990323
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRIORITY APPLN. INFO.: DE 1998-19816853				19980416
REFERENCE COUNT: 2			THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE	
FORMAT				

L4 ANSWER 165 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Monopropellant compns. for propulsion or gas generation consist of a soln. of hydrazinium nitroformate and/or ammonium dinitramide in water, optionally contg. lower alcs. (esp. MeOH or EtOH) as a supplemental fuel. Addnl. components that may also be present include solubilizers, vapor pressure decreasing agents, and performance improving agents. The compns. are useful as propellants for spacecraft orientation or positioning, spacercraft thrusters, and emergency propellants for jet aircraft fighters and submarines.

ACCESSION NUMBER: 1999:672353 CAPLUS
 DOCUMENT NUMBER: 131:288475
 TITLE: monopropellant formulations for gas generation or propulsion of spacecraft, submarines, and jet aircraft
 INVENTOR(S): Van den Berg, Ronald Peter; Muij, Johannes Maria; Elslands, Petrus Johannes Maria
 PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, Neth.
 SOURCE: Eur. Pat. Appl., 8 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 950648	A1	19991020	EP 1998-201190	19990415
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2328923	AA	19991021	CA 1999-2328923	19990414
WO 9552839	A1	19991021	WO 1999-NL216	19990414
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, OM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9933456	A1	19991101	AU 1999-33456	19990414
BR 9909684	A	20001219	BR 1999-9684	19990414
EP 1070031	A1	20010124	EP 1999-914804	19990414
EP 1070031	B1	20021127		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI				
JP 2002511382	T2	20020416	JP 2000-543403	19990414
AT 228492	E	20021215	AT 1999-914804	19990414
ES 2188150	T3	20030616	ES 1999-914804	19990414
NO 2000005188	A	20001025	NO 2000-5188	20001016
WO 1999-201190	A		19990415	
WO 1999-NL216	W		19990414	

PRIORITY APPLN. INFO.: REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 166 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In this paper, the thermal decompr. is studied of potassium dinitramide (KDN) by means of thermal anal. and FT-IR with *in situ* cell. The results show that the decompr. of KDN in solid state is different from that of liq. state. The main condensed phase product of the decompr. in solid state is KNO₃. While the decompr. of liq. state form KNO₃ and KNO₂ simultaneously. The possible mechanism of the thermal decompr. in solid state has been proposed. A eutectic can be formed by product KNO₃ with KDN. The eutectic temp. of KNO₃/KDN system is .apprx. 109.degree.. Moreover another eutectic system can be formed by KNO with KNO₂ to be eutectic temp. of .apprx. 315.

ACCESSION NUMBER: 1999:637380 CAPLUS
 DOCUMENT NUMBER: 131:324588
 TITLE: The thermal behavior of potassium dinitramide Part 2. Mechanism of thermal decomposition
 AUTHOR(S): Lei, M.; Liu, Z.-R.; Kong, Y.-H.; Yin, C.-M.; Wang, B.-Z.; Wang, Y.; Zhang, P.
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xian, Peop. Rep. China
 SOURCE: Thermochimica Acta (1999), 335(1-2), 113-120
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 167 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In this paper, thermal anal., X-ray photoelec. spectroscopy (XPS), etc. were used to investigate the thermal stability of potassium dinitramide (KDN). The thermal decompr. of KDN crystal conformed to the topochem. The decompr. product, KNO₃, formed eutectic system with KDN and decreased the liquefaction temp. of KDN.
 ACCESSION NUMBER: 1999:637377 CAPLUS
 DOCUMENT NUMBER: 131:324587
 TITLE: The thermal behavior of potassium dinitramide. Part 1.
 AUTHOR(S): Lei, M.; Zhang, Z.-Z.; Kong, Y.-H.; Liu, Z.-R.; Zhu, C.-H.; Shao, Y.-H.; Zhang, P.
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xian, Peop.
 SOURCE: Rep. China
 Thermochimica Acta (1999), 335(1-2), 105-112
 CODEN: THACAS; ISSN: 0040-6031
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 168 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An airbag inflation device is equipped with a chamber holding a flammable material that contains a 0.5-30 wt.% (based on the total wt. of flammable material) binding agent chosen from cellulose acetate butyrate and cellulose acetate propionate (with a m.p. of .apprx.230.degree. to .apprx.260.degree.), and an igniter for the flammable material. The cellulose acetate butyrate has a Br group content of .gtoreq.17 wt.%.
 The flammable material also contains: (1) non-metallic nitrogen-contg. compds. selected from nitroguanidine, triaminoguanidine nitrate, ethylenedinitrimate, ethylenediamine dinitrate, 1,3,3-trinitroazetidine, RDX, HMX, trinitrotoluene, 2,4,6-trinitrophenylmethylnitramine, and PETN (including mixts. of these compds.), and (2) up to 60 wt.% of an oxidizing agent selected from ammonium nitrate, alkali and alk. earth nitrates, ammonium perchlorate, alkali and alk. earth perchlorates, organoammonium nitrates, and ammonium dinitramide.
 ACCESSION NUMBER: 1999:635585 CAPLUS
 DOCUMENT NUMBER: 131:230640
 TITLE: Propellant compositions for inflation of vehicle airbags consisting of nitrogen-containing fuel, oxidant, and cellulose ester binder
 INVENTOR(S): Mangum, Michael G.; Quart, David C.
 PATENT ASSIGNEE(S): TRW Inc., USA
 SOURCE: Ger. Offen., 16 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19852318	A1	19990930	DE 1998-19852318	19981111
			US 1997-969128	19971111

L4 ANSWER 169 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The 15N-NMR chem. shifts (δ) of 24 nitramines [including 3 newly synthesized substances (e.g., 1-nitro-1-azaethylene, 1,3-dinitro-1,3-diazacyclobutane, and 1,3,5,7,9-pentanitro-1,3,5,7,9-pentazacyclodecane)] were reported. The relationships between the Arrhenius parameters (E_a and $\log A$) from low-temp. thermolysis and the δ values of the nitro groups in nitramine groups which were the first to react. Based on these relationships, the E_a and $\log A$ values were predicted for 13 compds. from these nitramines, the parameters of homolytic thermolysis were differentiated from those of bimol. or another heterolytic thermal decompn., and some aspects of the thermolysis of nitramines, esp. those with geometrical constraints and/or with strongly-withdrawing groups, were interpreted. An evaluation of the effect of solid-liq. phase transition on the kinetics of the initial stage of HMX thermolysis was also made.

ACCESSION NUMBER: 1999:607700 CAPLUS
 DOCUMENT NUMBER: 131:201883
 TITLE: Analysis and prediction of the Arrhenius parameters of low-temperature thermolysis of nitramines by means of the 15N NMR spectroscopy
 AUTHOR(S): Zeman, Svatopluk
 CORPORATE SOURCE: Department of Theory and Technology of Explosives, University of Pardubice, Pardubice, CZ-532 10, Czech Rep.
 SOURCE: Thermochimica Acta (1999), 333(2), 121-129
 PUBLISHER: CODEN: THACAS; ISSN: 0040-6031
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 171 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Complexes of nickel(II), cobalt(III), copper(II), zinc(II), and cadmium(II) with ethylenediamine contg. dinitramide anion were synthesized and formulated as $[M(en)_3][N(NO)_2]$. The compds. were studied by magnetic susceptibility measurements, electronic spectroscopy, and DTA.

ACCESSION NUMBER: 1999:509069 CAPLUS
 DOCUMENT NUMBER: 131:222562
 TITLE: Metal complexes containing ethylenediamine and dinitramide anion
 AUTHOR(S): Varand, V. L.; Larionov, S. V.; Kundo, N. N.
 CORPORATE SOURCE: Institute of Inorganic Chemistry, Siberian Division, Russian Academy of Sciences, Novosibirsk, Russia
 SOURCE: Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii) (1999), 69(2), 263-264
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 170 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The invention relates to a method of producing org. dinitramide salts, for instance, guanidine dinitramide and guanylurea dinitramide starting from ammonium dinitramide (ADN). A concd. aq. soln. of ADN is reacted with a concd. aq. soln. of an org. salt, whose anion is OH- or CO32- which is capable of taking up a proton from the ammonium ion of ADN and transferring said ion to ammonia. The formed byproducts, i.e. ammonia and possibly carbonic acid, are driven off from the soln., as well as a certain amount of water to maintain a concd. soln. The org. dinitramide salt is then pptd., for instance by cooling the soln. The method can be carried out as a continuous or semicontinuous process in a reactor, to which concd. aq. solns. of ADN and org. salt, resp., are supplied in equimol. amts. The soln. is transferred from the reactor to a pptn. tank where org. dinitramide salt is pptd. and a supernatant is recirculated to the reactor.

ACCESSION NUMBER: 1999:595083 CAPLUS
 DOCUMENT NUMBER: 131:216198
 TITLE: Manufacture of dinitramide salts for propellants
 INVENTOR(S): Letypov, Nikolai; Langlet, Abraham
 PATENT ASSIGNEE(S): Forvarets Forskningsanstalt, Swed.
 SOURCE: PCT Int. Appl., 10 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9946202	A1	19990916	WO 1999-SE8308	19990303
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MM, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BE, BJ, CF, CG, CL, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9800770	A	19990911	SE 1998-770	19980310
SE 511675	C2	19991108		
AU 9927566	A1	19990927	AU 1999-27566	19990303
PRIORITY APPLN. INFO.: SE 1998-770			SE 1998-770	19980310
WO 1999-SE8308			WO 1999-SE8308	19990303
REFERENCE COUNT: 2	THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT			

L4 ANSWER 172 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A new method for the estn. and prediction of enthalpies of formation was developed for high-energy salts (nitrates, perchlorates, chlorides, and nitramides) based on the authors' exptl. database and quant. structure-property relationships (QSPR). The calcd. values for the enthalpies were in good agreement with exptl. data.

ACCESSION NUMBER: 1999:454915 CAPLUS
 DOCUMENT NUMBER: 131:121524
 TITLE: The enthalpy of formation study of nitrate and perchlorate salts
 AUTHOR(S): Kostikova, Larisa; Matyushin, Yurii; Palyulin, Vladimir; Pivina, Tatjana
 CORPORATE SOURCE: Semenov Institute of Chemical Physics, Moscow, Russia
 SOURCE: International Annual Conference of ICT (1999), 30th, 76/1-76/7
 PUBLISHER: CODEN: IACIEQ; ISSN: 0722-4087
 DOCUMENT TYPE: Fraunhofer-Institut fuer Chemische Technologie
 LANGUAGE: Journal
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 173 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Pure ADN and ADN/ paraffin mixt. were investigated as strands in an optical bomb at pressures from 0.5-10 Mpa. The burning rate was detd. by a video system and a special frame anal. The anal. of emission spectra in the UV/VIS allowed the detn. of rotational temp. the detn. of the particle temp., and the identification of transient flame radicals. The vibrational temps. of final combustion products resulted from band spectra emitted in the near and mid IR spectral range. Burning rates of 5-70 mm/s were recorded showing a mesa/ plateau effect at 4-7 Mpa. The UV/VIS spectra indicated an emission of OH, NH, and CH radicals. The strong emission of OH bands of the ADN/paraffin-mixt. allowed the investigation of rotational temps. with mean value of 2700 K which is closely below the adiabatic flame temp. of 2950 K. One-dimensional intensity profiles of the flame radicals were measured. As combustion end product H₂O, CO, CO₂, and NO were found. The measured emission profiles of flame species and temps. are qual. discussed on the basis of simulations.
 ACCESSION NUMBER: 1999:454860 CAPLUS
 DOCUMENT NUMBER: 131:104194
 TITLE: Burning mechanisms of new energetic compounds
 AUTHOR(S): Kelzenberg, S.; Weiser, V.; Eisenreich, N.; Baier, A.; Eckl, W.
 CORPORATE SOURCE: Fraunhofer-Institut Chemische Technologie, Pfinztal, D-76327, Germany
 SOURCE: International Annual Conference of ICT (1999), 30th, 14/1-14/12
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 174 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Plane-wave ab initio calcns. based on d. functional theory and the pseudopotential method were used to study the structural properties of cryst. ammonium dinitramide (ADN). The optimization of the crystal structure was done with full relaxation of at. positions and lattice parameters under P21/c symmetry. The calcns. were performed using periodic boundary conditions in all three directions. The predicted crystal structure is in good agreement with x-ray data and indicates no internal symmetry for the dinitramide ion, in contradistinction to the gas phase theor. results. The two halves of the dinitramine ion are twisted with respect to each other while the NO₂ groups are rotated out of the N-N-N plane. The authors have developed an intermol. potential that describes the structure of the ADN crystal in the approxn. of rigid ions. This potential is composed of pairwise Lennard-Jones, H-bonding terms, and Coulombic interactions. Crystal-packing calcns. without symmetry constraints performed with the potential reproduce accurately the main crystallog. features and yield very good agreement with the estd. lattice energy. This potential was further tested in isothermal-isobaric mol. dynamics simulations at atm. pressure and in the temp. range 4.2-350 K. The main temp. effect is an increase in rotational disorder of the ammonium ions, without any significant change of the translational order of the ions. The thermal expansion coeffs. calcd. for the model indicate anisotropic behavior.
 ACCESSION NUMBER: 1999:444863 CAPLUS
 DOCUMENT NUMBER: 131:207162
 TITLE: Classical and Quantum Mechanical Studies of Crystalline Ammonium Dinitramide
 AUTHOR(S): Soreacu, Dan C.; Thompson, Donald L.
 CORPORATE SOURCE: Department of Chemistry, Oklahoma State University, Stillwater, OK, 74078, USA
 SOURCE: Journal of Physical Chemistry B (1999), 103(32), 6774-6782
 CODEN: JPCBFK; ISSN: 1089-5647
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 175 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB DNAZ (3,3-dinitroazetidine) readily undergoes nucleophilic addn. reactions with electron deficient haloaroma., cyanogen bromide, S-methyl-N-nitrosothiourea and dichloroglyoxime to afford novel, energetic 1-substituted 3,3-dinitroazetidines. N-Nitrosation of DNAZ readily occurs, and Mannich condensations of DNAZ with polynitro aics. are also described. The synthesis and properties of the energetic materials derived from these reactions are discussed.
 ACCESSION NUMBER: 1999:411860 CAPLUS
 DOCUMENT NUMBER: 131:144472
 TITLE: Preparation of 1-substituted 3,3-dinitroazetidines
 AUTHOR(S): Hiskey, Michael A.; Johnson, M. Catherine; Chavez, David E.
 CORPORATE SOURCE: Los Alamos National Laboratory, Los Alamos, NM, 87545, USA
 SOURCE: Journal of Energetic Materials (1999), 17(2 & 3), 233-252
 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 176 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetics of nitration of N-nitro-.beta.-aminopropionitrile to the corresponding N,N-dinitro deriv. with nitronium salts in alkyl acetates and acetonitrile were studied. The reaction proceeds in the kinetic region and is of first order with respect to the substrate. The kinetic isotope effect in the nitration with nitronium tetrafluoroborate is 1.85, and in the nitration with nitronium hexafluorosilicate, 1.32. The rate-detg. stage is proton abstraction from the NH group.
 ACCESSION NUMBER: 1999:398879 CAPLUS
 DOCUMENT NUMBER: 131:157532
 TITLE: Nitration by nitronium salts: VII. Kinetics of nitration of N-nitro-.beta.-aminopropionitrile
 AUTHOR(S): Guk, Yu. V.; Golod, E. L.; Gidaspov, B. V.
 CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
 SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1998), 34(10), 1423-1425
 CODEN: RUOCQZ; ISSN: 1070-4280
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 177 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Compds. which inhibit the microtubule system of plants are useful for combating protozoan diseases of the neuromuscular system caused by Neospora. These compds. include herbicides such as 2,6-dinitroanilines and N-aryl carbamates. Thus, benfluralin and dinitramide were completely cytotoxic to N. caninum in cell culture at 10⁻⁶ and 10⁻⁷ g/mL, resp.
 ACCESSION NUMBER: 1999:375397 CAPLUS
 DOCUMENT NUMBER: 131:29747
 TITLE: Agents for combating Neospora species
 INVENTOR(S): Greif, Gisela; Lieb, Folker; Fedtke, Carl
 PATENT ASSIGNEE(S): Bayer Aktiengesellschaft, Germany
 SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIIXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9927923	A1	19990610	WO 1998-EP7460	19981120
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
DE 19753504	A1	19990610	DE 1997-19753504	19971203
CA 2312396	RA	19990610	CA 1998-2312396	19981120
AU 9917561	A1	19990616	AU 1999-17561	19981120
AU 749466	B2	20020606		
EP 1033982	A1	20000913	EP 1998-962368	19981120
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
BR 9815126	A	20001107	BR 1998-15126	19981120
JP 2001524518	T2	20011204	JP 2000-522909	19981120
NZ 504878	A	20021025	NZ 1998-504878	19981120
US 2002100481	A1	20030529	US 2002-307721	20021202
PRIORITY APPLN. INFO.: D 1997-19753504 A 19971203 WO 1998-EP7460 W 19981120 US 2000-555560 B1 20000531				
REFERENCE COUNT: 4	THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT			

L4 ANSWER 179 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompn. of ammonium dinitramide proceeds via homolytic rupture of the N=N₂ bond and partially by the proton transfer reaction. The monomol. decay of the anion to N₂O and NO₃⁻ in the solid state at 60.degree. occurs with higher rates than those in the melt. This is related to a change in the reactivity of the anion due to the violation of its symmetry on going to the solid state. The absence of hydrogen bonds between the anion and cations or water mols. is an addnl. condition for the fast decay.
 ACCESSION NUMBER: 1999:347521 CAPLUS
 DOCUMENT NUMBER: 131:89812
 TITLE: Thermal decomposition of ammonium dinitramide and mechanism of anomalous decay of dinitramide salts
 AUTHOR(S): Pavlov, A. N.; Grebenikov, V. N.; Nazina, L. D.; Nazin, G. M.; Manelis, G. B.
 CORPORATE SOURCE: Institute for Chemical Physics Research, Russian Academy of Sciences, Chernogolovka, 142432, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1999), 48(1), 50-54
 CODEN: RCBUEY; ISSN: 1066-5285
 PUBLISHER: Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 178 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The title salts have been prep'd. and structurally characterized from room temp. x-ray single crystal diffraction data. The crystal structures of both salts show distinct monoprotected melaminium cations and dinitramide or nitrate anions. Efficient packing in the solid state is achieved by extensive hydrogen bonding between two-dimensional zigzag ribbons of the melaminium cations and the anions, resulting in high densities of the solid state structures of 1.74 for the dinitramide and 1.71 g/cm³ for the nitrate.
 ACCESSION NUMBER: 1999:368359 CAPLUS
 DOCUMENT NUMBER: 131:129972
 TITLE: Energetic materials: the preparation and structural characterization of melaminium dinitramide and melaminium nitrate
 AUTHOR(S): Alan
 CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo,
 SOURCE: OH, 43606, USA
 JOURNAL: Journal of Chemical Crystallography (1999), 29(1), 45-55
 PUBLISHER: Kluwer Academic/Plenum Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 95 THERE ARE 95 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 180 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The invention relates to a method for producing ADN prills. The method comprises melting and dispersion of ADN in a nonpolar medium to obtain droplets of ADN in the medium; cooling the medium for solidification of the droplets into prills and sepn. of the prills from the medium. Ultrasonic energy is supplied to the medium during dispersion. The invention also concerns a polymodal mixt. of ADN prills contg. prills having a particle size of <40 .mu.m. produced according to the method.
 ACCESSION NUMBER: 1999:297372 CAPLUS
 DOCUMENT NUMBER: 130:313992
 TITLE: Method of producing ammonium dinitramide (ADN) prills
 INVENTOR(S): Langlet, Abraham; Johansson, Martin
 PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
 SOURCE: PCT Int. Appl., 9 pp.
 CODEN: PIIXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9921795	A1	19990506	WO 1998-SE1938	19981027
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
SE 9703928	A	19990429	SE 1997-3928	19971028
SE 512396	C2	20000313		
AU 9897717	A1	19990517	AU 1998-97717	19981027
PRIORITY APPLN. INFO.: SE 1997-3928 19971028 AU 1998-97717 19981027 WO 1998-SE1938 19981027				
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT				

L4 ANSWER 181 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The invention relates to a method of producing prills of ADN intended to be mixed with a polymer system. The method comprises melting and dispersion of ADN in a nonpolar medium to obtain droplets of ADN in the medium; cooling of the medium to solidify the droplets into prills, and sepn. of the prills from the medium. The nonpolar medium essentially consists of a plasticizer which is compatible with the polymer system. The nonpolar system may also contain a polymer, such as HTPB, for adjusting the viscosity of the medium.

ACCESSION NUMBER: 1998-297371 CAPLUS

DOCUMENT NUMBER: 1307313990

TITLE: Method of producing ammonium dinitramide (ADN) prills suitable for use in a polymer system

INVENTOR(S): Langlet, Abraham; Johansson, Martin

PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.

SOURCE: PCT Int. Appl., 8 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 9921794	A1	19990506	WO 1998-SE1937	19981027	
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,					
TM:	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9703928	A	19990429	SE 1997-3928	19971026	
SE 512396	C2	20000313			
AU 9897716	A1	19990517	AU 1998-97716	19981027	
			WO 1998-SE1937	19981027	
PRIORITY APPLN. INFO.:			SE 1997-3928	19971026	
REFERENCE COUNT:	3		THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT					

L4 ANSWER 182 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The invention relates to the prodn. of prills of ADN. Homogeneous, pore-free prills are produced by making droplets of ADN solidify at low pressure, preferably under vacuum below 25 torr. The prilling can be carried out in a prill tower or in a liq. nonpolar medium. The nonpolar medium may consist of a plasticizer or a plasticizer with a polymer added for adjustment of the viscosity of the medium. Ultrasonic energy can be supplied to the medium during prilling to obtain an intense dispersion of molten ADN in the medium and, thus, small prills. ADN prills having a particle size below 40 μ m can be produced in this way. The invention also concerns a poly(monomeric) of ADN prills comprising prills having a particle size below 40 μ m produced according to the method.

ACCESSION NUMBER: 1999-297370 CAPLUS

DOCUMENT NUMBER: 1307313990

TITLE: Method of producing prills of ammonium dinitramide (ADN)

INVENTOR(S): Langlet, Abraham; Johansson, Martin

PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.

SOURCE: PCT Int. Appl., 15 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 9921793	A1	19990506	WO 1998-SE1936	19981027	
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,					
TM:	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
SE 9703928	A	19990429	SE 1997-3928	19971028	
SE 512396	C2	20000313			
AU 9897715	A1	19990517	AU 1998-97715	19981027	
			SE 1997-3928	19971028	
PRIORITY APPLN. INFO.:			WO 1998-SE1936	19981027	
REFERENCE COUNT:	3		THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT					

L4 ANSWER 183 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompr. of ammonium dinitramide, NH4(NO2)2 (ADN), in the gas phase has been studied at 373-920 K by pyrolysis/mass spectrometry under low-pressure conditions using a Saalfeld reactor. The reaction of the sublimed mixt. of NH3 and HN(NO2)2 (dinitramic acid, DN) was found to be initiated by the unimol. decompr. of DN, HN(NO2)2 . fwdarw. HNNO2 + NO2, followed by the rapid decompr. reaction, HNNO2 + M . fwdarw. N2O + OH + M. The measured abs. yields of NH3, H2O, N2, and N2O, calibrated with std. mixts., could be satisfactorily modeled at 10 Torr He carrier gas pressure

by employing the theor. computed values of $k_2 = 6.79 \text{ times } 10^{48} \text{ T-1.0 exp}(-21780/\text{T}) \text{ s-1}$ and $k_3 = 7.53 \text{ times } 10^{24} \text{ T-2.9 exp}(-12958/\text{T}) \text{ cm}^3/(\text{mol s})$ by high-level ab initio MO and canonical variational

Rice-Ramsperger-Kassel-Marcus (MO/cVRRKM) calcs. The key reactions with recommended rate consts. are presented.

ACCESSION NUMBER: 1999-285202 CAPLUS

DOCUMENT NUMBER: 130:287602

TITLE: Thermal decomposition of gaseous ammonium dinitramide at low pressure: kinetic modeling of product formation

with ab initio MO/cVRRKM calculations

AUTHOR(S): Park, J.; Chakraborty, D.; Lin, M. C.

CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA

SOURCE: Symposium (International) on Combustion, [Proceedings]

(1998), 27th(Vol. 2), 2351-2357

CODEN: SYMCAQ; ISSN: 0082-0784

PUBLISHER: Combustion Institute

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 184 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Coating of thin films onto solid particle was achieved by in-situ simultaneous nucleation and deposition of dissolved material out of a supercrit. fluid, film formation, and subsequent thermal conditioning of the coating on the particles. The coating method involves an enclosed system that provides (1) for suspension of the solid particles to be coated; (2) for dissolv. of the coating material in the supercrit. fluid solvent; (3) for temp. or pressure swing operations causing film deposition/coating of the suspended solid particles and; (4) addnl. chem. addn. and/or thermal cycles providing for any addnl. reactions required (such as polyrn.). Thus, CO2 supercrit. fluid contg. MDI and hydroxy-terminal polybutadiene was used to coated either ammonium nitrate particles or NaCl.

ACCESSION NUMBER: 1999-262202 CAPLUS

DOCUMENT NUMBER: 130:298010

TITLE: Supercritical fluid aided coating of particulate material

INVENTOR(S): Sunol, Aydin K.

PATENT ASSIGNEE(S): University of South Florida, USA

SOURCE: PCT Int. Appl., 19 pp.

CODEN: PIIXD2

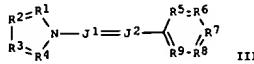
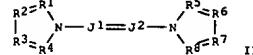
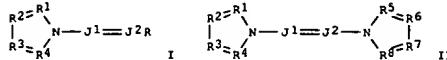
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 9919085	A1	19990422	WO 1998-US21751	19981015	
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
CA 2306215	AA	19990422	CA 1998-2306215	19981015	
AU 9919952	AL	19990503	AU 1999-19952	19981015	
EP 1028820	AL	20000823	EP 1998-964682	19981015	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI					
US 6426116	B1	20020730	US 2000-529568	20001026	
PRIORITY APPN. INFO.:			US 1997-62332P	P 19971015	
			WO 1998-US21751	W 19981015	
REFERENCE COUNT:	9		THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT					



AB Novel energetic compds., comprising N,N'-azobis-nitroazoles or analogs, are esp. useful as gas generators for inflating automobile or aircraft occupant restraint devices (e.g., airbags), can also be useful in solid propellants and primary explosives, such as detonators, blasting caps, etc. The compds. are of general structures I [R is a monocyclic nitrogen-contg. heterocycle or bicyclic arom. substituent; R1-4 are N, N-fwdarw.O, (N+Ra)2-, CH, C-Rb, CNcRd, and C-NO2; Ra, Rb are C1-alkyl,

F; Rc, Rd = H, Cl-24-alkyl; Z- is a counterion; J1, J2 are N or N-fwdarw.O], II [R5-8 is selected from the same components as R1-4], III [R9 is chosen from the same components as R1-8]. Similar structures were also reported: (1) which are similar to III, in which the six-membered ring is replaced by an azulene-type bicyclic system, and (2) which are similar to II, in which a third five-membered ring is joined to one of

the five-membered rings by an azo or azoxy linkage. Preferred compds. are 1,1'-azobis(3-nitro-1,2,4-triazole) and 1,1'-azobis(3,5-dinitro-1,2,4-triazole).

ACCESSION NUMBER: 1999:212820 CAPLUS

DOCUMENT NUMBER: 130:239630

TITLE: N,N'-Azobisnitroazoles and analogs as detonators and inflators for occupant restraint devices and airbags

INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell,

Paul

E.

PATENT ASSIGNEE(S): SRI International, USA

SOURCE: U.S., 8 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5889161	A	19990330	US 1998-78302	19980513
US 6156136	A	20001205	US 1998-220098	19981222
WO 9958506	A1	19991118	WO 1999-US10395	19990521
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MM, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TH,			

AB A thermal study of the dinitramide salts of lithium, sodium, potassium, rubidium and cesium is presented. The series displayed a complex set of DSC (differential scanning calorimetry) exothermic decays with the exception of the lithium salt which showed two simple exothermic decompr. reactions. All five salts thermally decompd. to the equiv. nitrate salt as evidenced by DSC melting endotherms and TGA (thermogravimetric anal.) stoichiometric mass losses. Phys. changes due to thermal heating were followed by hot stage microscopy. Thermal decay was accompanied by gas evolution.

ACCESSION NUMBER: 1999:171385 CAPLUS

DOCUMENT NUMBER: 130:269345

TITLE: Thermal characteristics of alkali metal dinitramide salts

AUTHOR(S): Cliff, Matthew D.; Smith, Matthew W.
CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory
(AMRL)-DSTO, Salisbury, 5108, Australia

SOURCE: Journal of Energetic Materials (1999), 17(1), 69-86
CODEN: JOEMDK; ISSN: 0737-0652

PUBLISHER: Dowden, Brozman & Devine, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR

THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
AU 9940752 A1 19991129 AU 1999-40752 19990511
EP 1077951 A1 20010228 EP 1999-924191 19990511
R: DE, FR, GB, IT, NL

PRIORITY APPLN. INFO.: US 1998-78302 A3 19980513

WO 1999-US10395 W 19990511

OTHER SOURCE(S): MARPAT 130:239630

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR

THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

AB Using fairly simple technique and small samples it was possible to det. the thermal diffusivity, sp. heat capacity, and thermal cond., all as a function of sample temp., for a variety of components of solid rocket propellants. The oxidizers AP, ADN, CL20, HMX, RDX, HNF, TNAZ were

examd. as well as the nonenergetic polymers Teflon, HTPB, and polyurethane, energetic binders contg. GAP and BAMO and/or NMMO, and actual solid propellant XH39, N5, N12, and SB129.

ACCESSION NUMBER: 1999:171383 CAPLUS

DOCUMENT NUMBER: 130:284211

TITLE: Thermal properties measurements of solid rocket propellant oxidizers and binder materials as a function of temperature

AUTHOR(S): Hanson-Parr, Donna M.; Parr, Timothy P.
CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake,

Lake, CA, 93355-6100, USA

SOURCE: Journal of Energetic Materials (1999), 17(1), 1-48

CODEN: JOEMDK; ISSN: 0737-0652

PUBLISHER: Dowden, Brozman & Devine, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR

THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 188 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of two hexammonium polymorphs, 1 and 2, and the ethane-1,2-diammonium, 3, salts of dinitramide were detd. 1 Crystallizes in the triclinic space group P-hivin.1 with a 6.391(2), b 7.5826(9), c 10.828(1) .ANG., .alpha. 77.58(1), .beta. 88.18(2), .gamma. 87.54(2).degree., 2 crystallizes in the monoclinic space group P21/c with a 6.4993(3), b 14.5149(8), c 10.6557(4) .ANG., .beta. 94.300(4).degree., and 3 crystallizes in the triclinic space group P-hivin.1 with a 5.614(1), b 6.867(2), c 7.371(2) .ANG., .alpha. 68.89(2), .beta. 89.00(2), .gamma. 78.90(2).degree.. At. coordinates and R's are given. The three structures all contain protonated amine cations which are involved in H bonding interactions with dinitramide anions.
 ACCESSION NUMBER: 1998:158908 CAPLUS
 DOCUMENT NUMBER: 130:274347
 TITLE: A new class of flexible energetic salts. Part 5. The structures of two hexammonium polymorphs and the ethane-1,2-diammonium salts of dinitramide
 AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
 CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
 SOURCE: Laboratory, Washington, DC, 20375, USA
 Journal of Chemical Crystallography (1998), 28(9), 673-681
 PUBLISHER: Plenum Publishing Corp.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 190 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Vibrational spectra of several nitramines in the long-wave region (50-450 cm⁻¹) were studied. The frequencies of intra- and intermol. vibrations were sepd. and a tentative assignment of the frequencies of self-associative complexes was performed.
 ACCESSION NUMBER: 1999:101717 CAPLUS
 DOCUMENT NUMBER: 130:229305
 TITLE: Far IR and Raman vibrational spectra of nitramines
 AUTHOR(S): Shlyapochnikov, V. A.; Khaikin, L. S.; Grikina, E.; Cherskaya, N. O.; Makimova, L. E.; Pyatakov, N. F.
 CORPORATE SOURCE: N. D. Zelinsky Institute of Organic Chemistry, Russian
 SOURCE: Academy of Sciences, Moscow, 117913, Russia
 Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(11), 2173-2176
 CODEN: RCBUEY; ISSN: 1066-5285
 PUBLISHER: Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 189 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermodyn. anal. is carried out of mixts. of solid rocket propellants that contain beryllium or beryllium hydride as energetic component with various oxidizers and polymeric fuel binders. The comparative anal. is carried out of ballistic efficiency of the compns. that contain aluminum and without energetic component during the calcn. of d. and loss due to two-phase product combustion.
 ACCESSION NUMBER: 1999:107946 CAPLUS
 DOCUMENT NUMBER: 130:239594
 TITLE: Analysis of energetic possibilities of composite rocket propellants using beryllium and beryllium hydride as the energetic component
 AUTHOR(S): Nechiporenko, G. N.; Lempert, D. B.
 CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
 SOURCE: Khimicheskaya Fizika (1998), 17(10), 93-106
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 191 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The burning rate of ammonium dinitramide (ADN) has been studied as a function of pressure and different additives, the temps. in the combustion front, and the compn. of combustion products. Some kinetic characteristics of decompn. have been also obtained. A combustion model has been used that accounts for decompn. and evapn., and calcd. parameters of combustion are compared with exptl. data. The mechanism of ADN combustion is similar to that of many other onium salts. Its peculiarities are conditioned by a rather high decompn. rate in the liq. state, low reactivity of decompn. products, and formation of ammonium nitrate as an intermediate product at low pressures.
 ACCESSION NUMBER: 1999:101698 CAPLUS
 DOCUMENT NUMBER: 130:126966
 TITLE: Combustion of ammonium dinitramide
 AUTHOR(S): Strunin, V. A.; D'Yakov, A. P.; Manelis, G. B.
 CORPORATE SOURCE: Institute of Chemical Physics, Russian Academy of Sciences, Chemogolovka, Moscow Region, 142432, Russia
 SOURCE: Combustion and Flame (1999), 117(1/2), 429-434
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 192 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Predicting the rates of photolysis of org. compds. in natural waters is limited by several factors. For direct photolysis of dil. solns. of org. compds. in surface waters, the product of the quantum yield (efficiency) and light absorption rate are needed, but can rarely be calc'd. from structure activity relations (SARs); direct kinetic consts. can be estd. reliably using measured quantum yields and solar models or simple spread sheet databases to calc. rates as a function of latitude and season. Indirect photoreaction consts. can be calc'd. from measured or estd. rate consts. and the av. transient photooxidant concn. SARs for photooxidant rate consts. are available for some classes of compds. The overall indirect photolysis rate for a specific compd. is the sum of all significant oxidn. reactions for the compd. Quantitation of the rate process requires that a reaction profile be developed for each compd.

ACCESSION NUMBER: 1999:90842 CAPLUS
DOCUMENT NUMBER: 130:213290
TITLE: Predicting photoreaction rates in surface waters
AUTHOR(S): Mill, Theodore
CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
SOURCE: Chemosphere (1999), 38(6), 1379-1390
CODEN: CMSHAF; ISSN: 0045-6535
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 193 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetic consts. of thermal decompr. were detd. for ADN and prilled ADN by DSC and TG. Pressurized DSC at 550 psi air or helium had similar kinetic consts. for prilled ADN, namely 29 kcal/mol activation energy and a log frequency factor of .apprx.14.0 min-1. These values were similar to those found in sealed sample pans in which the decompr. gases were confined. DSC and TG runs in open sample pans in N2 or He had higher activation energies and frequency factors (i.e., 40-43 kcal/mol and 18-20 min-1, resp.). Thus, it appears that confinement of the ADN decompr. gases either under pressurization or a sealed environment accelerates the decompr. of prilled ADN. Kinetics of decompr. of unprilled ADN at atm. pressure in N2 or He by DSC and TG were $E_a = 37$ kcal/mol and $\log A = 17$ min-1. Unprilled ADN had lower activation energies and frequency factors for decompr. than prilled ADN that contained stabilizers. The effect of sample containment (i.e. aluminum, coated aluminum, gold, and glass ampoules) on the shape of the DSC curve of ADN was investigated. Isothermal vacuum TG of ADN at 45-75.degree. and the DSC anal. of the TG residues showed unusual results at 60.degree.. The rate and enthalpy of decompr. of four dinitramide salts and their dielec. relaxation were related to the basicity of the cation.

ACCESSION NUMBER: 1999:80572 CAPLUS
DOCUMENT NUMBER: 130:211450
TITLE: Thermal analysis of ammonium dinitramide (ADN)
AUTHOR(S): Tompa, Albert S.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (1998), 674(Vol. 1, 1998 JANNAF Propellant Development & Characterization Subcommittee
and Safety & Environmental Protection Subcommittee Joint Meeting, Vol. 1), 215-248
PUBLISHER: CPIUDT; ISSN: 0272-5118
DOCUMENT TYPE: Chemical Propulsion Information Agency
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 194 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Liq. carbon dioxide (L-CO2) was used to replace methylene chloride as the solvent in nitration with dinitrogen pentoxide (N2O5) and anhyd. nitric acid. This new L-CO2 nitration procedure overcame many of the drawbacks of conventional mixed acid (HNO3/H2SO4) media when dealing with sensitive substrates. Both N2O5 and anhyd. nitric acid are sol. in L-CO2, which is a major advantage because they can be added directly into the substrate being nitrated. The N2O5 was dissolved in L-CO2, cooled, and added to L-CO2 contg. the materials to be nitrated. NSWC's Green Chem. program requires prepn. of energetic materials contg. C-nitro, N-nitro, and O-nitro moieties using L-CO2 as the processing solvent.

ACCESSION NUMBER: 1999:80555 CAPLUS
DOCUMENT NUMBER: 130:211420
TITLE: Nitrations with N2O5 and anhydrous HNO3 in liquid carbon dioxide
AUTHOR(S): Nauflett, G. W.; Farncomb, R. E.
CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
SOURCE: CPIA Publication (1998), 674(Vol. 1, 1998 JANNAF Propellant Development & Characterization Subcommittee
and Safety & Environmental Protection Subcommittee Joint Meeting, Vol. 1), 11-23
CODEN: CPIUDT; ISSN: 0272-5118
PUBLISHER: Chemical Propulsion Information Agency
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 195 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide (ADN) is a class 1.1 oxidizer that may be used in rocket propellants and explosives. Previous studies have shown that ADN is a female reproductive toxicant, causing implantation failure in Sprague-Dawley rats when it is administered during the preimplantation period of gestation. The purpose of this follow-up study was to identify the mechanism(s) assocwd. with implantation failure following exposure to ADN. Mated female rats were treated with 2.0 g per L (g L-1) ADN in their drinking water for 24, 48, 72, or 96 h before preimplantation embryos were harvested from the oviducts or uterine horns. On gestation day 1 (GD-1), comparable nos. of morphil. normal two-cell embryos were harvested from the oviducts of the treatment and control groups. On GD-2, the development of the embryos harvested from the treated animals was either slowed or halted when compared to the control embryos. By GD-4, 98% of the embryos harvested from the control group had developed to the morula or blastocyst stage; these were collected from the uterine horns. On GD-4 in the treated group, 41% of the harvested embryos remained at the two-cell stage and 59% were degenerate; 82% of these embryos were collected from the oviducts. These data suggest that the implantation failure seen in animals treated with ADN is due to embryolethality.

ACCESSION NUMBER: 1999:68619 CAPLUS
DOCUMENT NUMBER: 130:248008
TITLE: Effects of ammonium dinitramide on preimplantation embryos in Sprague-Dawley rats
AUTHOR(S): Graeter, Linda J.; Wolfe, Robin E.; Kinhead, Edwin R.;
CORPORATE SOURCE: Flemming, Carlyle D. Toxicology Division Armstrong Laboratory, ManTech Environmental Technology, Wright-Patterson Air Force Base, OH, USA
SOURCE: Toxicology and Industrial Health (1998), 14(6), 789-798
CODEN: TIEHEC; ISSN: 0748-2337
PUBLISHER: Stockton Press
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 196 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Process for producing ammonium dinitramide (ADN) prills comprises introducing solid particulate ADN along with one or more thermal stabilizers into the top of a melting column, allowed to melt to form pre-prills while passing through a hot zone ("heated zone") in the prilling column, and allowing the pre-prills to form spheres in the presence of an upwardly blown inert medium which is countercurrent to the path of the ADN in the prilling column. The flow is designed not to blow the ADN out of the prilling column. The rate of prill formation can, if desired, be accelerated by providing addnl. cooling, such as refrigeration, to the cooling zone in the prilling column. The ADN prills

are suitable for use in propellants.

ACCESSION NUMBER: 1999:48687 CAPLUS

DOCUMENT NUMBER: 130:83727

TITLE: Manufacture of thermally-stabilized prilled ammonium dinitramide particles

INVENTOR(S): Highsmith, Thomas K.; McLeod, Corey S.; Wardle,

Robert

B.: Hendrickson, Roger
Thiokol Corporation, USA

SOURCE: PCT Int. Appl., 42 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9901408	A1	19990114	WO 1998-US13583	19980702
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KR, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TW, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SZ, SG, SI, SK, SL, TJ, TM, TR, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				

TM	RW: GH, GM, KE, LS, MW, SD, SZ, SG, SI, SK, SL, TJ, TM, TR, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
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AU 9883788 A1 19990125 AU 1998-83788 19980702

EP 994829 A1 20000426 EP 1998-934209 19980702

R: DE, FR, SE

PRIORITY APPLN. INFO.: US 1997-51567P P 19970702
WO 1998-US13583 W 19980702

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 197 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Guanylurea dinitramide (I), of general formula H₂N(C(=O)NH₂)NC(=O)N₂, can be used as an explosive, a propellant (esp. for solid rocket motors), and as a gas generator for vehicle safety equipment (e.g., an automobile airbag). I is easily prep'd. by pptn. of guanylurea sulfate with nitronitramide [HN(NO₂)₂]. Propellants and explosives contg. I are also claimed.

ACCESSION NUMBER: 1998:806617 CAPLUS

DOCUMENT NUMBER: 130:54478

TITLE: Propellants, explosives, and airbag inflators containing guanylurea dinitramide

INVENTOR(S): Langseth, Abraham

PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.

SOURCE: PCT Int. Appl., 12 pp.

CODEN: PIIXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9855428	A1	19981210	WO 1998-SE949	19980520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KR, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MW, SD, SZ, SG, SI, SK, SL, TJ, TM, TR, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
SE 9701897	A	19981122	SE 1997-1897	19970521
SE 509312	C2	19990111		
AU 9875616	A1	19981221	AU 1998-95616	19980520
EP 1007496	A1	20000614	EP 1998-923290	19980520
EP 1007496	B1	20021002		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, PT, IE, FI				
JP 2001527575	T2	20011225	JP 1998-550780	19980520
AT 225328	E	20021015	AT 1998-923290	19980520
ES 2182310	T3	20030301	ES 1998-923290	19980520
US 2001007913	A1	20010712	US 1999-423636	19991117
US 6291711	B2	20010918		

PRIORITY APPLN. INFO.:

SE 1997-1897 A 19970521

WO 1998-SE949 W 19980520

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 198 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The methods for the study of flame structure and kinetics of the thermal decompn. of solid propellant by probing mass spectrometry are described. The developed methods were applied to the study of ammonium dinitramide (ADN) combustion chem. The study has shown that along with ADN decompn., sublimation takes place to give gaseous ADN followed by dissociation to yielding ammonia and dinitramic acid (HD). Gaseous ADN has been obstd. in ADN decompn. products. The structure of ADN combustion zones at 1-6 atm was studied using a mol.-beam mass-spectrometry as well as a microthermocouple technique. Three combustion zones have been obstd. Gaseous ADN has been discovered in the first cool flame zone at 3 atm. Gaseous ADN dissociates on NH₃ and HD followed by HD decompn. in the near-surface zone are key reactions resulting in a temp. rise of about

150 K. The second high-temp. zone is found within 6-8 mm from the ADN burning surface at 6 atm. The main reaction in this zone is ammonia oxidn. by nitric acid and the combustion temp. is 1400 K. The third zone was obstd. at 40 atm, the measured final temp. was approx. 2000 K. The obtained data form the basis for the development of a chem. mechanism of reactions in both the ADN flame and combustion model.

ACCESSION NUMBER: 1998:787893 CAPLUS

DOCUMENT NUMBER: 130:97703

TITLE: Molecular-beam mass-spectrometry to ammonium dinitramide combustion chemistry studies

AUTHOR(S): Korobenichhev, Oleg P.; Kubida, Leonid V.; Paletsky, Alexander A.; Shmakov, Andrey G.

CORPORATE SOURCE: Russian Academy of Sciences, Novosibirsk, 630090, Russia

SOURCE: Journal of Propulsion and Power (1998), 14(6), 991-1000

CODEN: JPOEL; ISSN: 0748-4658

PUBLISHER: American Institute of Aeronautics and Astronautics

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 199 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A correlation is derived for the dependence of specific pulse of the solid rocket fuel mixt. with hydrocarbon binder and oxidizer on the chem. compn. and enthalpy of oxidn. The compn. with and without addnl. fuel components

(Al, Mg, Be, B) are considered. The efficiency of addn. of the fuel component decreases with an increase of the energy efficiency of binder-oxidizer mixt.

ACCESSION NUMBER: 1998:740149 CAPLUS

DOCUMENT NUMBER: 130:54460

TITLE: Dependence of the specific pulse of optimized mixtures

of solid rocket fuels (Binder + metal + oxidizer) on properties of a metal and oxidizer

Lempert, D. B.; Nichiporenko, G. N.; Doganova, G.

AUTHOR(S): P.;

CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia

SOURCE: Khimicheskaya Fizika (1998), 17(8), 114-120

CODEN: KHFD9; ISSN: 0207-401X

PUBLISHER: Nauka

DOCUMENT TYPE: Journal

LANGUAGE: Russian

L4 ANSWER 200 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The reaction of 3HN with NO producing H + N₂O and N₂ + OH was investigated with the variational RRKM (Rice-Ramsperger-Kassel-Marcus) theory using existing potential energy surface data. The bimol. const. for the loss of the reactants and those for the formation of N₂O and N₂ were calcd. and compared with exptl. results. The agreement between theory and exptl. appeared to be satisfactory, although improvement in both areas of this important elementary reaction is desirable. The results have application in the combustion of nitramine propellants, esp. those contg. ammonium dinitramide.

ACCESSION NUMBER: 1998:738501 CAPLUS
 DOCUMENT NUMBER: 130:54472
 TITLE: Theoretical calculations for the kinetics of the HN+NO reaction
 AUTHOR(S): Kristyan, S.; Lin, M. C.
 CORPORATE SOURCE: Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
 SOURCE: Chemical Physics Letters (1998), 297(3,4), 200-204 CODEN: CHPLBC; ISSN: 0009-2614
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 201 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method for manufg. melt-cast explosive charges (e.g., shaped charges) consists of suspending and explosive component in molten ADN (ammonium dinitramide) as the matrix. The explosive components are selected from the group consisting of RDX, HMX, HNIW (CL-20), and powd. Al.

ACCESSION NUMBER: 1998:721658 CAPLUS
 DOCUMENT NUMBER: 129:345108
 TITLE: Preparation of melt-cast explosive charges using molten ammonium dinitramide matrix
 INVENTOR(S): Langlet, Abraham; Ostmark, Henric
 PATENT ASSIGNEE(S): Forsvarets Forskningsanstalt, Swed.
 SOURCE: PCT Int. Appl., 10 pp.

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9849123	A1	19981105	WO 1998-SE775	19980428
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MM, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG	SE 9701622	A	19981030	SE 1997-1622
SE 511285	C2	19990906	SE 1997-1622	19970429
AU 9873547	A1	19981124	AU 1998-73547	19980428
PRIORITY APPLN. INFO.:			WO 1998-SE775	19980428
REFERENCE COUNT:	4	THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT				

L4 ANSWER 202 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB K dinitramide (KDN) was synthesized by decyanation reaction of N,N-dinitro-.beta.-aminopropionitrile, and the pure product was prep'd. by recrystn. The structure of KDN was confirmed by elemental anal., IR, UV, and atom absorption spectrum, and the thermal behavior was detd. by DSC. The m.p. and d. of KDN were detd.

ACCESSION NUMBER: 1998:718475 CAPLUS
 DOCUMENT NUMBER: 129:345076
 TITLE: Synthesis and characterization of potassium dinitramide for propellants

AUTHOR(S): Lei, Ming; Zhang, Zhizhong; Zhu, Chunhua; Wang, Bozhou
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
 SOURCE: Huozhayao Xuebao (1998), 21(4), 9-10
 CODEN: HUXUPP
 PUBLISHER: Zhongguo Bingqi Gongye DL-204 Yanjiuso
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 203 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An explosive comprising a complex between a dinitramide salt and an explosive selected from the group consisting of TNB (1,3,5-trinitrobenzene), HNIW (hexanitrohexaazaisowurtzitanate) and TNAZ (1,3,3-trinitroazetidine). The dinitramide salt is of general formula Mⁿ⁺(-N(NO₂)₂)_n, in which M is a metal cation or a nitrogen-contg. cation, and n = 1-3. The dinitramide salt is preferably ADN (ammonium dinitramide) or KDN (potassium dinitramide).

ACCESSION NUMBER: 1998:706188 CAPLUS
 DOCUMENT NUMBER: 129:318332
 TITLE: Composite explosives consisting of complexes of nitro compounds with dinitramide salts
 INVENTOR(S): Langlet, Abraham; Johansson, Martin; Wingborg, Niklas;
 PATENT ASSIGNEE(S): Ostmark, Henric
 SOURCE: Forsvarets Forskningsanstalt, Swed.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9846545	A1	19981022	WO 1998-SE674	19980414
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, RW: GH, GM, KE, LS, MM, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG	SE 9701394	A	19981016	SE 1997-1394
SE 511284	C2	19990906	SE 1997-1394	19970415
AU 9870931	A1	19981111	AU 1998-70931	19980414
PRIORITY APPLN. INFO.:			SE 1997-1394	19970415
			WO 1998-SE674	19980414
REFERENCE COUNT:	1	THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE		
FORMAT				

L4 ANSWER 204 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 1998:690736 CAPLUS
 DOCUMENT NUMBER: 130:59294
 TITLE: Toward a habit modification of ammonium dinitramide
 AUTHOR(S): Nago, Lee M.
 CORPORATE SOURCE: Yale Univ., New Haven, CT, USA
 SOURCE: (1998) 313 pp. Avail.: UMI, Order No. DA9835251
 From: Diss. Abstr. Int., B 1998, 59(5), 2207
 DOCUMENT TYPE: Dissertation
 LANGUAGE: English

L4 ANSWER 205 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Clinker-forming nonazide gas-generating compns., useful for inflating passenger restraint gas inflator bags, comprise a multimetallic coordination complex oxidizer selected from coordination complexes comprised of anionic nitro and nitrito ligands coordinated with a transitional metal template, and a cationic component comprised of two or more different metals. The gas-generating compns. generate relatively more gas and are significantly less toxic than known azide gas generating compns., and furthermore, generate solids that are readily filterable.
 ACCESSION NUMBER: 1998:612057 CAPLUS
 DOCUMENT NUMBER: 129:3204880
 TITLE: Gas-generating composition for inflating automobile airbag passive restraint system complex oxidizers
 with multimetals cations
 INVENTOR(S): Lundstrom, Norman H.
 PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
 SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9839274	A1	19980911	WO 1998-US3868	19980226
W: CA, JP, KR RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,				
SE US 5962808	A	19991005	US 1997-811694	19970305
EP 964842	A1	19991222	EP 1998-908768	19980226
R: GB				
JP 2001514611	T2	20010911	JP 1998-538605	19980226
PRIORITY APPLN. INFO.:			US 1997-811694 A	19970305
			WO 1998-US3868	19980226
REFERENCE COUNT:	4	THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT		

L4 ANSWER 206 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB High nitrogen gas-generating compns., useful in inflating passenger restraint gas inflator bags, comprise at least one metal ammine or metal hydrazine coordination complex in combination with at least one low impact and low friction sensitivity high nitrogen fuel. The combination results in gas generating compns. that are relatively more stable and less sensitive, and generate relatively more gas and less solids than known gas-generating compns.
 ACCESSION NUMBER: 1998:604883 CAPLUS
 DOCUMENT NUMBER: 129:191215
 TITLE: Gas generator propellant compositions for inflating of
 airbags
 INVENTOR(S): Lundstrom, Norman H.
 PATENT ASSIGNEE(S): Automotive Systems Laboratory, Inc., USA
 SOURCE: PCT Int. Appl., 31 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9837040	A1	19980827	WO 1998-US2376	19980203
W: CA, JP, KR RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,				
SE PRIORITY APPLN. INFO.:		US 1997-797411	19970210	
REFERENCE COUNT:	7	THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT		

L4 ANSWER 207 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB $[C(NH_2)_3][OZNNO_2]$ (I) is triclinic, space group P.hivin.1, $a = 9.311(2)$, $b = 8.325(2)$, $c = 10.417(3)$.degree.. $\alpha = 62.44(2)$, $\beta = 77.43(2)$, $\gamma = 67.51(2)$.ANG., $R = 0.038$. I is stabilized by hydrogen bonds between the anions and cations.
 ACCESSION NUMBER: 1998:591567 CAPLUS
 DOCUMENT NUMBER: 129:268206
 TITLE: Guanidinium dinitramide salt: structure, stability
 AUTHOR(S): Dubovitskii, F. I.; Golovina, N. I.; Pavlov, A. N.; Atovmyan, L. O.
 CORPORATE SOURCE: Inst. Khim. Fiz., Ross. Akad. Nauk, Chernogolovka, Russia
 SOURCE: Doklady Akademii Nauk (1998), 360(4), 491-493
 PUBLISHER: MAIK Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 208 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Since the first synthesis of ADN by SRI there have been continuing unresolved questions about its thermal stability and decompn. kinetics. In addn. a great deal of interest has been focused on ADN compatibility with various ingredients in propellant and explosive formulations. In this study an effort has been made to increase the thermal stability of ADN by the addn. of stabilizers. Russell (1992) at NRL showed how ADN decompns. into the dinitramic acid NH4(NO2)2 .fwdarr. NH3 + HN(NO2)2. Therefore by adding stabilizers which are basic in nature, such as urea, hexamethylenetetramine, cyanoquadrine and TEPPAN the dissociation reaction should be inhibited. Isothermal heating method was employed to obtain kinetic data by microcalorimetry and differential scanning calorimetry (DSC).
 ACCESSION NUMBER: 1998:576059 CAPLUS
 DOCUMENT NUMBER: 129:262431
 TITLE: Thermal stability of ammonium dinitramide (ADN) and ADN containing various stabilizers
 AUTHOR(S): Boswell, Robert F.; Tompa, Albert S.
 CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640-5035, USA
 SOURCE: Proceedings of the Workshop on the Microcalorimetry of Energetic Materials, Leeds, UK, Apr. 7-9, 1997
 (1997), T1-77. Defence Research Agency: Sevenoaks, UK.
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 209 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Two metal dinitramide salts, sodium dinitramide (SDN) and potassium dinitramide (KDN), were synthesized and evaluated as candidate substitutes for metal nitrate and ammonium nitrate oxidizers for use in the prepn. of boron-based pyrotechnic compns. Prior to incorporation, each salt was subjected to extensive hazard testing; both were deemed to be relatively stable compds. but possessed a low ignition temp. (SDN, 123 degree, and KDN, 140.degree.C.). A thermal anal. study, by differential scanning calorimetry and thermogravimetry, indicated that the decompn. of SDN and KDN was a complex series of reactions and that each salt decomps. to its equiv. nitrate salt, as evidenced by mass spectroscopy and x-ray diffraction. The dinitramide salts were used in formulating four novel boron-contg. pyrotechnic compns.: B-SDN, B-SDN-HTPB, B-KDN, and B-KDN-HTPB. Measurement of IR emission spectra for the combustion of each type of flare compn. allowed for the detection and elucidation of the principle boron oxida. products, including the alkali metaborates and several boron oxides [BO(g), B2O3, and B2O2].
 ACCESSION NUMBER: 1998:574432 CAPLUS
 DOCUMENT NUMBER: 129:218683
 TITLE: Metal dinitramides: new novel oxidants for the preparation of boron based flare compositions
 AUTHOR(S): Dawe, Jodieann R.; Cliff, Matthew D.
 CORPORATE SOURCE: Aeronautical and Maritime Research Laboratory (AMRL)-DSTO, Salisbury, SA 5108, Australia
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1998), 24th, 789-810
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 210 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Conventional propellants and plastic-bonded explosives (PBXs) contain binders which are unlikely to be degraded by exposure to solvents or dil. acids and bases under practical demililing (demilitarization) conditions. Such polymer backbones (e.g., polysulfides, polybutadienes, polyethylene glycol, polyoxyalkylenes, etc.) and the curing linkages (e.g., hydroxy esters, hydroxy amides, urethanes, etc.) are not sufficiently labile to hydrolyze under such relatively mild conditions. However, polyesters contg. electron-withdrawing substituents on the dicarboxylic acids can be hydrolyzed under mild conditions, esp. those contg. di-, tri-, or polyethylene glycols. Urethane linkages in cured elastomers formed from isocyanates bearing an adjacent carbomethoxy moiety [esp. lysine Me ester diisocyanate (LDIM)], also enhance hydrolysis. LDIM is an advantageous curative since it hydrolyzes to the nontoxic essential amino acid, lysine. Propellants and PBXs contg. hydroxyl-terminated polyethylene glycol adipate cured with LDIM can be demililed by immersion in aq. ammonia. Dissolv. of the binder allows facile and quant. recovery of non-polymeric energetic ingredients (e.g., ammonium perchlorate, aluminum, etc.).
 ACCESSION NUMBER: 1998:574375 CAPLUS
 DOCUMENT NUMBER: 129:278172
 TITLE: Binders facilitating ordnance demilitarization
 AUTHOR(S): Reed, Russell; Ciaramitaro, David A.; Brady, Vicki L.
 CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake, CA, 93555-6001, USA
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1998), 24th, 457-467
 CODEN: PPYSDT; ISSN: 0270-1898
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 211 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The effect of nonequil. diffusional flow on detonation velocities in composite explosives is exmd. Detonation conditions are derived for complete equil., temp. and pressure equil., and two forms of pressure equil. Partial equil. are assocd. with systems which have not had sufficient time for transport to smooth out the gradients between spatially sep. regions. The nonequil. detonation conditions are implemented in the CHEQ equation of state code. We show that the detonation velocity decreases as the non-chem. degrees of freedom of the explosive are allowed to equilibrate. It is only when the chem. degrees of freedom are allowed to equilibrate that the detonation velocity increases.
 ACCESSION NUMBER: 1998:573723 CAPLUS
 DOCUMENT NUMBER: 129:262473
 TITLE: Nonequilibrium detonation of composite explosives
 AUTHOR(S): Nichols, Albert L., III
 CORPORATE SOURCE: Lawrence Livermore National Laboratory, Livermore, CA, 94550, USA
 SOURCE: AIP Conference Proceedings (1998), 429(Shock Compression of Condensed Matter--1997), 345-348
 PUBLISHER: American Institute of Physics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE
 FORMAT

L4 ANSWER 212 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The propellant powder contains a mixt. of .gtoreq.2 dinitro-diaza compds. as a plasticizer in addn. to nitramine, nitrocellulose, a plastic binder, and/or explosive, and optional stabilizers and combustion moderators. Typically, the plasticizer consists of 2,4-dinitro-2,4-diazapentane 40.+-.10, 2,4-dinitro-2,4-diazahexane 45.+-.10, and 3,5-dinitro-3,5-diazahexane 15.+-.15 wt.%. The amt. of plasticizer is 2-55 wt.%.

ACCESSION NUMBER: 1998:550394 CAPLUS
 DOCUMENT NUMBER: 129:191212
 TITLE: Propellant powder for barrelled weapons
 INVENTOR(S): Langlotz, Walter; Muller, Dietmar
 PATENT ASSIGNEE(S): Diehl Stiftung & Co., Germany
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2

DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9834991	A1	19980813	WO 1998-EP639	19980206
W: AU, CA, US				
R: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,				
DE 19757469	A1	19980827	DE 1997-19757469	19971223
DE 19757469	C2	20001102		
AU 9863950	A1	19980826	AU 1998-63950	19980206
AU 719937	B2	20000518		
EP 960093	A1	19991201	EP 1998-909398	19980206
R: CH, DE, FR, GB, IT, LI, NL, SE				
US 2001003295	A1	20010614	US 1999-355479	19990730
US 6309484	B2	20011030		

PRIORITY APPLN. INFO.: DE 1997-19704792 A 19970208
 DE 1997-19757469 A 19971223
 WO 1998-EP639 W 19980206

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 214 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Flame structure of propellants based on HTPB (3%) and ADN (97%) at pressures of 0.5, 0.75, 1, and 6 atm was studied by probing mol.-beam mass-spectrometry (MBMS), of thin thermocouples, and video recording. Burning zone width at 1 atm is .approx.1.5 mm. Thermocouple research has shown temp. fluctuations of about .+-.400.degree. at 1 atm in flame zone within 1.5-4 mm from the burning surface. Along with temp. fluctuations, fluctuations in the intensities of mass peaks 17 (NH3), 28 (CO, N2), 30 (NO), 46 (HNO3, NO2), 44 (CO2, N2O) take place due to the combustion of the propellant under investigation spatial-time heterogeneity and non-stationarity. Video-recording demonstrates the existence of several brightly illuminating torches of .approx.1 mm at the burning surface disappearing at one site and appearing at another with torch life time of 0.2 s. The combustion products compn. was found away from the burning surface and in its immediate vicinity using MBMS. The compn. of O-N-H-contg. products of propellant combustion at 1 atm is close to this of ADN combustion at 6 atm. The main C-contg. propellant combustion product at 1 atm is CO2, CO was not found.

ACCESSION NUMBER: 1998:498917 CAPLUS
 DOCUMENT NUMBER: 129:138163
 TITLE: Study of the flame structure of ADN/HTPB composite propellants using molecular-beam mass-spectrometry
 AUTHOR(S): Paletsky, Alexander A.; Korobelnichev, Oleg P.
 CORPORATE SOURCE: Inst. Chemical Kinetics Combustion, Novosibirsk, 630090, Russia
 SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 156.1-156.11
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 213 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The pyrotech. gas generator for automobile airbags consists of a hollow cylindrical body with a sliding cylindrical piston which seps. a reservoir from a combustion chamber. The lateral cylinder wall contains gas ports through which hot compressed gases (contained in a chamber between the piston and cylinder wall) escape. The pyrotech. charge consists of a liq.

fuel introduced into the reservoir or a reducing liq. agent introduced into the reservoir and reacting with an oxidizing gas mixt. injected into the combustion chamber.

ACCESSION NUMBER: 1998:546018 CAPLUS
 DOCUMENT NUMBER: 129:138166
 TITLE: Pyrotechnical gas generator with a injectable liquid fuel
 INVENTOR(S): Perotto, Christian; Duvacquier, Daniel
 PATENT ASSIGNEE(S): SNC Livbag, Fr.
 SOURCE: Fr. Demande, 25 pp.
 CODEN: FRXXBL

DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2757119	A1	19980619	FR 1996-15574	19961218
FR 2757119	B1	19990108		

PRIORITY APPLN. INFO.: FR 1996-15574 19961218

L4 ANSWER 215 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The explosives ammonium dinitramide (ADN) and 2,4,6,8,10,12-hexanitrohexaazaisowurzitan (CL20) were explored by NMR under high resolin. conditions. The measurements were performed with a NMR spectrometer at 400.13 MHz proton resonance frequency. The 1H, 13C, 14N, 15N, and 17O NMR spectra were recorded and the signals were assigned. With the help of the 13C NMR, the JOC-H coupling consts. were detd. for CL20.

ACCESSION NUMBER: 1998:498893 CAPLUS
 DOCUMENT NUMBER: 129:110971
 TITLE: Characterization of ADN and CL20 by NMR spectroscopy
 AUTHOR(S): Kaiser, Manfred; Ditz, Bert
 CORPORATE SOURCE: Wehrwissenschaftliches Inst. Material-, Explosiv-Betriebsstoffe, Swisttal, D-53913, Germany
 SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 130.1-130.8
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 216 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide (ADN) spheres can be shaped in a 2-phase system. Molten ADN is dispersed in a continuous phase which is not mixable with ADN. Caused by the surface- and interfacial tension the molten droplets take on a spherical shape. Emulsions from molten ADN and different oils are investigated. The solidification of the molten droplets to spherical particles takes place during the cooling down below the m.p. of ADN. By the choice of suitable substances and optimizing the process parameters, spherical ADN particles with a mean size from 5-800 nm are produced.
ACCESSION NUMBER: 1998:498847 CAPLUS
DOCUMENT NUMBER: 129:110944
TITLE: Production of ammonium dinitramide (ADN) particles
AUTHOR(S): Teipel, U.; Heintz, T.; Leisinger, K.; Krause, H.
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfingstal, D-76318, Germany
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 63.1-63.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German

L4 ANSWER 217 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The reaction of N₂O₅ with NH₃ leads to the formation of NH₄NO₃, NH₂NO₂, and NH₄(NO₂)₂. The mechanism of the NH₄(NO₂)₂ prepn. is described proposing a double nitration of NH₃ via the intermediates NH₂NO₂ and NH(NO₂)₂. Due to the catalytic decompr. of the intermediates, H₂O and N₂O were formed as further reaction products found by IR spectroscopy. In addn. to the known reaction of NH₃ with N₂O₅ forming NH₄(NO₂)₂, NH₂NO₂ and its decompr. products, a 3rd reaction was discovered: the reaction of NH₃ with N₂O₅ forming NH₄NO₃ and N₂O with the same stoichiometry as it was obad. for NH₄(NO₂)₂ synthesis. Kinetic modeling of the total reaction scheme led to a equation for the differential selectivity of NH₄(NO₂)₂. The equation could be confirmed by exptl. results.
ACCESSION NUMBER: 1998:498835 CAPLUS
DOCUMENT NUMBER: 129:110958
TITLE: The reaction of ammonia with dinitrogen pentoxide
AUTHOR(S): Frenck, Christian; Janitschek, Wieland; Weisweiler, Werner
CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfingstal, D-76327, Germany
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 50.1-50.12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: German

L4 ANSWER 218 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Thermal decompr. of dinitramide salts, the new class of high energetic explosives, are investigated. Thermal decompr. of dinitramid onium salts proceeds via the dissociative mechanism when pKa of the base is <5.0 and via the monomol. decay of the anion at pH >7.0. Going from the melt to the solid state, the reaction mechanism does not change (excluding NH₄ salt), and the rate decreases by 1-2 orders of magnitude. Unusual regularities are obad. for decompr. of NH₄ salt and metal salts in the solid phase. The solid phase reaction is 10-104 times faster than that in the melt, its rate has a sharp peak in the region of eutectics melting with the decompr. product (metal or NH₄ nitrate), and it is instantly inhibited by water vapor. In the inhibited regime, the rate in the solid phase is lower than that in the liq. phase. No anomalous effects inherent in dinitramide NH₄ salt and metal salts in the solid phase are obad. during decompr. of onium salts.
ACCESSION NUMBER: 1998:498813 CAPLUS
DOCUMENT NUMBER: 129:1163573
TITLE: Decomposition mechanism of dinitramide salts.
AUTHOR(S): Pavlov, Alexander M.; Nazin, Gennadiy M.
CORPORATE SOURCE: Inst. Chemical Physics, Russian Academy of Sciences, Chernogolovka, 142432, Russia
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 25.1-25.14
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 219 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The thermal behavior and hazard assessment of Li, Na, K, Rb, and Cs dinitramide are presented. Differential scanning calorimetry, thermal gravimetric anal., DTA and hot stage microscopy were used to examine the thermal decompr. of these dinitramide salts. The metal dinitramides quant. decompr. to their resp. metal nitrates, which were identified by mass spectrometry and X-ray diffraction. Hazard assessment showed that the metal dinitramides were insensitive to impact and friction, moderately insensitive to electrostatic discharge but relatively unstable under vacuum stability testing conditions.
ACCESSION NUMBER: 1998:498812 CAPLUS
DOCUMENT NUMBER: 129:124503
TITLE: Alkali metal dinitramides. Properties, thermal behavior, and decomposition products
AUTHOR(S): Cliff, Matthew D.; Edwards, Darren P.; Smith, Matthew W.
CORPORATE SOURCE: Aeronautical Maritime Research Lab., Salisbury, 5108, Australia
SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 24.1-24.12
CODEN: IACIEQ; ISSN: 0722-4087
PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 220 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A prilling process was developed to improve the hygroscopicity, thermal stability, and safety properties of NH4 dinitramide (ADN). The process involves the addn. of additives before prilling to overcome the shortcomings. The prilled ADN shows improved properties in composite propellants. Most significant is that both the burn rate exponent and temp. sensitivity in a polyether binder system is unchanged from the analogous NH4ClO4 system. The major obstacle for booster applications are the hazards properties of ADN-contg. propellants.
 ACCESSION NUMBER: 1998:498810 CAPLUS
 DOCUMENT NUMBER: 129:138115
 TITLE: ADN manufacturing technology
 AUTHOR(S): Highsmith, T. K.; McLeod, C.; Wardle, R. B.; Schmitt, R.; Bottaro, J.; Penwell, P.; Bomberger, D.; Brough, John
 CORPORATE SOURCE: Thiokol Propulsion, Brigham City, UT, 84341, USA
 SOURCE: International Annual Conference of ICT (1998), 29th(Energetic Materials), 20, 1-20.14
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 221 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In acid medium dinitramide quant. decompns. into nitric acid and nitrogen(1) oxide. The rate of this reaction was measured by spectrophotometry in aq. H2SO4, HClO4, and HNO3 over a wide temp. range and at various compns. of the medium. On the basis of the dependence of the apparent rate consta. on the compn. of the medium and of the UV spectra of solns. of nitramide NH2NO2 in concd. nitric acid and its mixts. with H2SO4 a mechanism was proposed for acid-catalyzed decompn. of dinitramide. The proposed mechanism includes denitration of dinitramide to nitramide and nitronium cation; the subsequent decompn. of nitramide yields nitrogen(1) oxide and water. Depending on the nitrating power of the medium, the rate-detg. stage may be either denitration of dinitramide or decompn. of nitramide.
 ACCESSION NUMBER: 1998:492703 CAPLUS
 DOCUMENT NUMBER: 129:207720
 TITLE: Kinetics and mechanism of acid-catalyzed decomposition
 AUTHOR(S): Astrat'ev, A. A.; Kuznetsov, L. L.; Gidaspov, B. V.
 CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
 SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1997), 33(12), 1745-1752
 CODEN: RJOCFO; ISSN: 1070-4280
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 222 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB According to spectrophotometric data, decompn. of 2-(N,N-dinitramino)propionitrile in aq. buffer solns. (pH 9.5-11.5) at 17-45.degree.C quant. yields dinitramide anion. The process follows the general base catalysis pattern in terms of the E1cb mechanism with deprotonation of the substrate at the rate-detg. stage. The reaction conforms to the Brønsted equation with a coeff. .beta. close to unity.
 ACCESSION NUMBER: 1998:492702 CAPLUS
 DOCUMENT NUMBER: 129:216255
 TITLE: Kinetics and mechanism of formation of dinitramide by reaction of 2-(N,N-dinitramino)propionitrile with nucleophilic reagents
 AUTHOR(S): Shcherbinin, M. B.; Tselinskii, I. V.; Gidaspov, B. V.
 CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, 198013, Russia
 SOURCE: Russian Journal of Organic Chemistry (Translation of Zhurnal Organicheskoi Khimii) (1997), 33(12), 1739-1744
 CODEN: RJOCFO; ISSN: 1070-4280
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 223 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of 3,3-dinitroazetidinium, 1, and 1-isopropyl-3,3-dinitroazetidinium dinitramide, 2, were detd. Compnd. 1 crystallizes in the orthorhombic space group Cmc21, with a 9.932(1), b 8.545(1), c 11.107(1) .ANG., while 2 crystallizes in the orthorhombic space group Pbca, with a 11.464(2), b 11.657(2), c 17.916(4) .ANG.. At. coordinated and R's are given. Compnd. 2 formed spontaneously from 1 by reacting with the solvent, acetone, during attempts to recrystallize it. The conformations adopted by the dinitramide ions are quite different with the bend, twist, and torsion angles for the dinitramide ion in 1 being much smaller than those in 2. Possible reasons for the dramatic differences in conformations obstd. in 1 and 2 are the different local symmetries for this ion found in the two structures as well as the absence of H bonding interactions in 2.
 ACCESSION NUMBER: 1998:435664 CAPLUS
 DOCUMENT NUMBER: 129:115904
 TITLE: A new class of flexible energetic salts. 3. The crystal structures of the 3,3-dinitroazetidinium dinitramide and 1-isopropyl-3,3-dinitroazetidinium dinitramide salts
 AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
 CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
 SOURCE: Laboratory, Washington, DC, 20375, USA
 CODEN: JCCYEV; ISSN: 1074-1542
 PUBLISHER: Plenum Publishing Corp.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 224 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A no. of issues crit. to ammonium dinitramide (ADN) propellant technol. were discussed, including a survey of the chem. purity levels of ADN produced by different sources, the safety properties of ADN with different levels of water content, the prilling of neat ADN to produce spherical particles, and the aging stability and processing properties of propellants contg. ADN and ADN prills. Propellant processing needs to be conducted in a dry environment because of the hygroscopic properties of ADN. Upon aging, ADN propellants behave in a similar manner to that of conventional nitrate-ester-contg. propellants and can be stabilized by adding N-methyl-p-nitroaniline stabilizer to prolong shelf-life. The presence of a chem. stabilized within the crystal is not crit. to obtaining good aging characteristics, but it is crit. to use small amts. (0.3-0.5 wt.%) hexamethylenetetramine or other stabilizer in the melt phase of the prilling process to ensure safety and thermal stability of the ADN melt.

ACCESSION NUMBER: 1998:435091 CAPLUS
 DOCUMENT NUMBER: 129:150865
 TITLE: ADN propellant technology
 AUTHOR(S): Chan, May Lee; Turner, Alan; Merwin, Larry; Ostrom, Gregory; Head, Carol; Wood, Stan
 CORPORATE SOURCE: Naval Air Warfare Center Weapons Division, China Lake,
 CA, USA
 SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 627-635.
 Editor(s): Kuo, Kenneth K. Begell House: New York,
 N.
 Y.
 CODEN: 66JBAU
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 225 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The properties of ammonium dinitramide (ADN), with a high impulse and high burning rate and as a potential oxidizer to replace ammonium perchlorate (AP). Were summarized and compared with HTPB-contg. composite propellants based on ADN, AP, and other candidate oxidizers (e.g., Cl-20, ammonium nitrate, HNF). Although it has the advantages of lower friction sensitivity than RDX, minimal smoke prodn. and a less violent reaction upon combustion, ADN has the disadvantages of increased shock sensitivity and an increased sensitivity to light and moisture. The impact sensitivity of ADN is of the same magnitude as that of RDX but varied a great deal with the shape of the particles (e.g., prilled ADN is nearly twice as insensitive as RDX). The cost of prodn. of ADN has recently declined significantly. A study of the sensitivity, thermal stability, and some spectroscopic properties of ADN were given. The ignition temp. was 160 degrees (detd. by Wood's metal bath). The thermal stability, measured by microcalorimetry, showed that ADN is stable to at least 80 degrees, and that impurities cause decreased thermal stability. The activation energy [$E_a=158 \text{ kJ/mol}$] and frequency factor ($K_0=6.0 \cdot 10^{15} \text{ s}^{-1}$) were detd. from DSC data using the ASTM method E 698-79. ADN in aq. soln. is sensitive to light.

ACCESSION NUMBER: 1998:435090 CAPLUS
 DOCUMENT NUMBER: 129:150864
 TITLE: ADN: a new high performance oxidizer for solid propellants
 AUTHOR(S): Langlet, A.; Wingborg, N.; Ostmark, H.
 CORPORATE SOURCE: Defence Research Establishment, Stockholm, S-172 90, Sweden
 SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 616-626.
 Editor(s): Kuo, Kenneth K. Begell House: New York,
 N.
 Y.
 CODEN: 66JBAU
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 226 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The lower thermal cond., larger elastic compliance, and greater brittleness of a typical energetic crystal contribute to the importance of thermomech. influences on combustion and initiation of explosion behavior. For example, recent laser-induced localized heating expts. conducted on RDX and AP crystal surfaces have revealed networks of microscopic cracks in assocn. with the initiation of chem. decompn. The crystallog.-detd. ultrafine crack networks (that have been traced in AP to the orthorhombic to rock salt structure-type phase transformation as well) are assocd., in turn, with the greater hardnesses of energetic crystals. The coupled hardness and brittleness properties were attributed to the difficulty of initiating viscoplastic flow by dislocation movement, as illustrated on a hardness stress-strain basis. In this respect, recent results showed comparable hardnesses of ADN and RDX crystals that were in agreement with a report of comparable drop-wt. impact sensitivities. A dislocation pile-up avalanche explanation of such drop-wt. impact sensitivity measurements was related to model calcns. of thermally induced explosive decompns. The dependence of impact sensitivity on crystal size was of special interest because of the possibility of relation to crystal size effects that were reported for the pressure dependencies of burning rates.

ACCESSION NUMBER: 1998:435067 CAPLUS
 DOCUMENT NUMBER: 129:138160
 TITLE: Thermomechanical aspects of energetic crystal combustion
 AUTHOR(S): Armstrong, R. W.; Elben, W. L.; Rameswamy, A. L.; Wu, C. Cm.
 CORPORATE SOURCE: University of Maryland, College Park, MD, 20742, USA
 SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 313-336.
 Editor(s): Kuo, Kenneth K. Begell House: New York,
 N.
 Y.
 CODEN: 66JBAU
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 227 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Initiation of explosion of liq. and solid explosives by rapid compression of gas inclusions has been the subject of extensive study during at least half of century. However only a limited quant., both theor. and phenomenol., description of the process up to now was achieved. This work is devoted to elaboration and application of two exptl. procedures of the initiation of energetic materials initiation by means of compression of gas cavities. One of the methods was used to generate data which revealed the role of air inclusions in causing ignitions during the rapid compression of a liq. under a broad range of conditions during prodn. or transportation. Another procedure, equipped with an impact device contg. a layer of explosive on the bottom of the hole filled by air to investigate sensitivity of solid energetic materials, was intended to simulate possible conditions of inbore premature explosions. The crit. pressure of initiation was detd. for many liq. explosives, esp. nitrocompounds, in a U-shaped tube. Dependence of crit. pressure on the hole depth was estd. in the fallhammer app. Approx. theor. relations were developed to describe exptl. results.

ACCESSION NUMBER: 1998:435065 CAPLUS
 DOCUMENT NUMBER: 129:138159
 TITLE: Ignition of liquid and solid nitrocompounds at fast compression of gas intrusions
 AUTHOR(S): Kondrikov, B. N.; Dorofeev, E. I.; Polikarpov, Yu. N.
 CORPORATE SOURCE: Mendelev University of Chemical Technology, Moscow, 125047, Russia
 SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 290-301.
 Editor(s): Kuo, Kenneth K. Begell House: New York,
 N.
 Y.
 CODEN: 66JBAU
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 228 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Methods for the study of flame structure and kinetics of the thermal decompr. of solid propellant (SP) by probing mass spectrometry (PMS) were described. Several types of setups based on microprobe and mol. beam mass spectrometric probing for the study of flame structure at high (10 atm) and low (.1toreq.1 atm) pressures were developed. An installation for studying thermal decompn. of SP at high heating rates (up to 20-100 degree/s) under conditions approx. similar to those in the condensed phase in the vicinity of the burning surface was described. Profiles of the species concns. in RDX and ADN flames were measured. The results of RDX flame structure modeling were in good agreement with the exptl. results. The results of gas-phase probes for ADN deflagration at 1, 3 and 6 atm. were presented. Flame structure studies of sandwich based on AP (ammonium perchlorate) confirmed a multizone structure and step-by-step mechanism of reactions in AP flames. A study of thermal decompn. of ADN by mol. beam mass spectrometry was carried out. The products of ADN thermal decompn. and products release rates on heating rate of 20 deg/s were obtained.

ACCESSION NUMBER: 1998:435043 CAPLUS
 DOCUMENT NUMBER: 129:138098
 TITLE: Study of flame structure, kinetics and mechanism of the thermal decomposition of solid propellants by probing mass spectrometry
 AUTHOR(S): Korobeinichev, O. P.; Kuibida, L. V.; Paletsky, A. A.;
 CORPORATE SOURCE: Shmakov, A. G.
 Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
 SOURCE: Challenges in Propellants and Combustion: 100 Years after Nobel, [International Symposium on Special Topics in Chemical Propulsion], 4th, Stockholm, May 27-31, 1996 (1997), Meeting Date 1996, 38-47. Editor(s): Kuo, Kenneth K. Begell House: New York, N.
 Y.
 CODEN: 66JBAU
 Conference
 English
 LANGUAGE:
 REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 229 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dinitramide salts are prep'd. in several steps from di-Et N-nitro-4-azahepanedioate [$\text{EtO}_2\text{CCH}_2\text{CH}_2\text{NNHNO}_2$] (I) by (1) retro-Michael reaction to yield Et 3-nitraminopropane ($\text{EtO}_2\text{CCH}_2\text{CH}_2\text{NNHNO}_2$) (II), (2) nitration of II with NO_2BF_4^- to $\text{EtO}_2\text{CCH}_2\text{CH}_2\text{NNO}_2$ (III), and (3) base hydrolysis of III to yield dinitramide [$\text{NO}_2\text{C}_2\text{H}_2\text{N}_2$]. I is synthesized by nitration of di-Et 4-azahepanedioate with $\text{HNO}_3\text{-Br}_2\text{-}(\text{CF}_3\text{CO}_2)_2\text{O}$. The dinitramide salts may

be effective solid oxidizers in explosives or propellants because of their higher oxygen content than nitrate salts.

ACCESSION NUMBER: 1998:417306 CAPLUS
 DOCUMENT NUMBER: 129:110952
 TITLE: A study on the synthesis of dinitramide salts
 AUTHOR(S): Chung, Kyoo-hyun; Sim, Hyun-ho
 CORPORATE SOURCE: Dept. of Chemistry, Inha University, Inchon, 402-751, S. Korea
 SOURCE: Kongop Hwahak (1998), 9(1), 155-157
 CODEN: KOHWE9; ISSN: 1225-0112
 PUBLISHER: Korean Society of Industrial and Engineering Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: Korean

L4 ANSWER 230 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 7 refs., on high-energy-d. (HED) materials with emphasis on a survey and classification of of HED materials, characteristic performance of HED materials, and military applications of HED materials. Materials discussed include CL-20, ADN, KDN, TNAZ, octanitrocubane, tetrinitrocubane, and hexanitrohexaazadamantane.

ACCESSION NUMBER: 1998:368295 CAPLUS
 DOCUMENT NUMBER: 129:110936
 TITLE: High energy density materials
 AUTHOR(S): Zhou, Shiguang; Wu, Wenjian
 CORPORATE SOURCE: Department of Materials Engineering and Applied Chemistry, National University of Defence Technology, Changsha, 410073, Peop. Rep. China
 SOURCE: Huagong Shikan (1997), 11(12), 3-6
 PUBLISHER: Huagong Shikan Zazhishe
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Chinese

L4 ANSWER 231 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The CNDO/2 electronic structure of nitramines was used to explain their tendency toward self-assocn. and complexation with PHOH via H bonding. The charge distribution within 19 nitramines indicated that complexation involved the O atoms of the NO_2 group. The heat of self-assocn. of secondary nitramines exceeded that of primary ones.

ACCESSION NUMBER: 1998:357842 CAPLUS
 DOCUMENT NUMBER: 129:122280
 TITLE: Intermolecular interactions of nitramines
 AUTHOR(S): Pjatakov, N. F.; Shlyapochnikov, V. A.; Cherskaya, N. O.; Vjyunova, I. B.
 CORPORATE SOURCE: Institute Physical Chemistry, Russian Academy Sciences, Moscow, 117977, Russia
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1995), 21st, 698-712
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 232 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Two electrostatic spark testers were applied to energetic materials such as primary and secondary explosives, pyrotechnic compns., mixts. of combustible material and oxydizer, and so on. A tester for high-sensitivity materials has the combination of an approaching needle and a flat plate electrodes, and store energies up to 0.8 J. Another test for medium-sensitive materials has the combination of two pipet plate electrodes in fixed position, and can store energies of 0.11-80 J. Many energetic materials were tested using above two testers, and the order of the electrostatic spark sensitivities of the materials was detd. The correlation of the test results were exmd. with other results, such as the dropping ball test. The order of sensitivity of primary explosives (i.e., the detonators and igniters) decreased in the order: PbHg²⁺ > Pb tricinato > PbHg²⁺Ia³⁺ > PbNg²⁺K⁺ > PbNg²⁺Tl³⁺ > PbHg²⁺Ba²⁺ > tetrazene > PbHg²⁺dextrin > tetrazene/50 wt.% starch > DDNP. The order of sensitivity of secondary explosives decreased in the order: PETN > RDX > HMX > ADN > HNS > Tetryl = TNT.

ACCESSION NUMBER: 1998:357764 CAPLUS
 DOCUMENT NUMBER: 128:323731
 TITLE: Electrostatic spark ignitability of energetic materials
 AUTHOR(S): Amari, Satoru; Hosoya, Fumio; Mizushima, Yojiro; Yoshida, Taduo
 CORPORATE SOURCE: Department of Materials Chemistry, Hosei University, Tokyo, 134, Japan
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1995), 21st, 13-31
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 234 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Both general and new energetic materials have an influence on the energy and signature characteristics of solid propellants. The application prospects of the novel energetic materials were thus predicted, contg. GAP (glycidyl azide polymer), CL-20, ammonium dinitramide, RDX, HMX, and DATH (1,7-diazido-2,4,6-trinitrazepane).
 ACCESSION NUMBER: 1998:353807 CAPLUS
 DOCUMENT NUMBER: 128:323727
 TITLE: Evaluation of energy and signature of XLDB propellant with new energetic materials
 AUTHOR(S): Guan, Dalin; Shang, Wengang; Feng, Wei
 CORPORATE SOURCE: Xian Modern Chem. Res. Inst., Xian, 710065, Peop. Rep.
 SOURCE: Tuijin Jishu (1998), 19(2), 81-86
 CODEN: TUJIEG; ISSN: 1001-4055
 PUBLISHER: Tuijin Jishu Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 233 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal behavior and combustion characteristics of ADN, a new type of energetic material, were analyzed. A hypothesis of ADN decomprn. in the initial stage of combustion was proposed. The burning rate equation of ADN and its mixts. was derived based on its chem. structure. The burning characteristics of ADN and its mixts. with different components were calcd. The calcd. results showed good agreement with the exptl. values. Based on the chem. structure and reaction, the mechanism of plateau combustion of ADN was discussed. The formation and disappearance of the intermediate product, NH4NO₃, played a key role in plateau or mesa combustion of ADN. ADN is used to increase the burning rate and decrease the pressure exponent in solid propellants.

ACCESSION NUMBER: 1998:353823 CAPLUS
 DOCUMENT NUMBER: 128:323728
 TITLE: Theoretical calculation of the burning rate characteristics of ADN and its mixtures
 AUTHOR(S): Zhao, Fengqi; Li, Shangwen; Yang, Dong; Song, Hangchang
 CORPORATE SOURCE: School of Chem. Engineering, Nanjing Univ. of Science and Technology, Nanjing, 210094, Peop. Rep. China
 SOURCE: Tuijin Jishu (1998), 19(2), 87-91
 CODEN: TUJIEG; ISSN: 1001-4055
 PUBLISHER: Tuijin Jishu Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 235 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of the hexaaquomagnesium (I), hexaaquomanganese (II), and hexaaquozinc (III) dihydrate salts of dinitramide were detd.: I crystallizes in monoclinic space group P21/n with a 9.589(2), b 7.420(1), c 11.116(2) .ANG., .beta. 108.25(3).degree.; II crystallizes in monoclinic space group P21/n with a 9.623(4), b 7.477(2), c 11.274(3) .ANG., .beta. 108.38(3).degree.; and III crystallizes in monoclinic space group P21/n with a 9.513(1), b 7.4270(8), c 11.164(1) .ANG., .beta. 108.806(6).degree.. At coordinates are given. The three structures are isostructural, consisting of hexaaquo cations, dinitramide anions and H₂O mole. interlinked by extensive three dimensional H bonding interactions. All O atoms as well as the central N atom of the dinitramide anion are involved in acceptor H bonds with neighboring H₂O protons. As a consequence of the constraints imposed by these H bonds the dinitramide ions are almost planar with av. deviations of 0.01 .ANG. for I, 0.03 .ANG. for II and 0.03 .ANG. for III.
 ACCESSION NUMBER: 1998:350334 CAPLUS
 DOCUMENT NUMBER: 129:74282
 TITLE: A new class of flexible energetic salts. Part 4. The crystal structures of hexaaquomagnesium(II), hexaaquomanganese(II), and hexaaquozinc(II) dihydrate salts of dinitramide
 AUTHOR(S): Gilardi, R. D.; Butcher, Ray J.
 CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research
 SOURCE: Laboratory, Washington, DC, 20375, USA
 CODEN: JCCYEV; ISSN: 1074-1542
 PUBLISHER: Plenum Publishing Corp.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 236 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of cubane-1,4-diammonium dinitramide (I) and cubane-1,2,4,7-tetraammonium dinitramide (II) were detd. I crystallizes in space group P21/c with a 6.018(2), b 11.642(3), c 9.754(3) .ANG., .beta. 107.24(2).degree., while II crystallizes in space group P21/c with a 9.401(4), b 9.603(3), c 12.603(4) .ANG., .beta. 111.08(3).degree.. At. coordinates are given. In these structures the ammonium substituents are sym. attached with respect to the cubane skeleton and have neither low lying empty orbitals nor available lone pairs of electrons thus they have a minimal effect on the metrical parameters of the cubane skeleton. All C-C bond lengths are close to the overall av. C-C bond length for all reported cubanes of 1.559 .ANG.. The conformations adopted by the dinitramide ions in both structures are quite different, with the bend, twist, and torsion angles for the dinitramide ion in I being significantly larger than those found for the dinitramide ions in II, due to the different types of H bonding found in the two structures. In II, the conformation adopted by the adjacent ammonium ions allows two of the three protons from each ammonium cation to form H bonds in such a manner that they span either the syn or the anti O atoms of a single dinitramide anion. The dinitramide anion is thus constrained by these interactions and is less free to twist and bend. These results provide further confirmation that the metrical parameters of both the cubane and dinitramide moieties are flexible and reflect their local environment.

ACCESSION NUMBER: 1998:350333 CAPLUS
 DOCUMENT NUMBER: 129:74281
 TITLE: A new class of flexible energetic salts. Part 2. The crystal structures of the cubane-1,4-diammonium dinitramide and cubane-1,2,4,7-tetraammonium dinitramide salts
 AUTHOR(S): Butcher, Ray J.; Gilardi, R. D.
 CORPORATE SOURCE: Department of Chemistry, Howard University, Washington, DC, 20059, USA
 SOURCE: Journal of Chemical Crystallography (1998), 28(2), 95-104
 CODEN: JCCVEW; ISSN: 1074-1542
 PUBLISHER: Plenum Publishing Corp.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 238 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Exptl. studies of CO₂ laser-induced combustion of ammonium dinitramide (ADN) were performed to det. the key phys. and chem. processes involved. Exptl. conditions covered the range of 0.1-5.0 atm in argon and incident laser heat fluxes of 20-300 W/cm². Quant. gaseous species measurements obtained by microprobe sampling and mass spectrometer anal. are presented in the form of spatial and temporal profiles. Both gas-phase temp. profiles and surface temps. measured with fine-wire thermocouples are given. Observations made with a high-magnification video recording system and Schlieren photog. of the phys. phenomena involved are also discussed. Three distinct regimes of behavior were identified during testing: laser-induced pyrolysis, laser-induced regression, and laser-assisted combustion. The phys., thermal, and chem. characteristics of these three regimes are described.

ACCESSION NUMBER: 1998:331951 CAPLUS
 DOCUMENT NUMBER: 129:6102
 TITLE: CO₂ laser-induced combustion of ammonium dinitramide (ADN)
 AUTHOR(S): Fetherolf, B. L.; Litzinger, T. A.
 CORPORATE SOURCE: General Dynamics, Pittsfield, MA, USA
 SOURCE: Combustion and Flame (1998), 114(3/4), 515-530
 CODEN: CBFMAO; ISSN: 0010-2180
 PUBLISHER: Elsevier Science Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L4 ANSWER 237 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 1998:346431 CAPLUS
 DOCUMENT NUMBER: 129:206385
 TITLE: Biotic and abiotic transformation of quadricyclane and dinitramide: immobilization of copper by bacterial sulfate reduction
 AUTHOR(S): Jin, Song
 CORPORATE SOURCE: Univ. of Wyoming, Laramie, WY, USA
 SOURCE: (1997) 67 pp. Avail.: UMI, Order No. DA9821466
 DOCUMENT TYPE: Dissertation
 LANGUAGE: English

L4 ANSWER 239 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A gas-emitting substance which is suitable for use in gas generators in different types of motor vehicle for inflating airbags comprises potassium dinitramide as oxidizing agent combined with a suitable fuel such as boron, zirconium, or titanium. The gas-emitting substance contains chlorine-free oxidizing agents.

ACCESSION NUMBER: 1998:293458 CAPLUS
 DOCUMENT NUMBER: 128:296663
 TITLE: Gas-emitting substance in gas generator for airbag inflation
 INVENTOR(S): Sjoberg, Per; Calsson, Staffan
 PATENT ASSIGNEE(S): Bofors Explosives AB, Swed.; Sjoberg, Per; Calsson, Staffan
 SOURCE: PCT Int. Appl., 10 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9818743	A1	19980507	WO 1997-SE1787	19971027
SE 9603968	A	19980501	SE 1996-3968	19961031
SE 507997	C2	19980810		
PRIORITY APPLN. INFO.:			SE 1996-3968	19961031
REFERENCE COUNT:		3	THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE	

FORMAT

L4 ANSWER 240 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetic regularities of the heat release during the thermal decompn. of lq. NH4N(NO₂)₂ at 102.4-138.9 degree.C were studied. Kinetic data for decompn. of different forms of dinitramide and the influence of water on the rate of decompn. of NH4N(NO₂)₂ show that the contributions of the decompn. of N(NO₂)₂- and HN(NO₂)₂ to the initial decompn. rate of the reaction at temps. about 100 degree.C are approx. equal. The decompn. has an autocatalytic character. The anal. of the effect of additives of HNO₃ solns. and the dependence of the autocatalytic reaction rate const. on the gas vol. in the system shows that the self-acceleration is due to an increase in the acidity of the NH4N(NO₂)₂ melt owing to the accumulation of HNO₃ and the corresponding increase in the contribution of the HN(NO₂)₂ decompn. to the overall rate. The self-acceleration ceases due to the accumulation of NO₃⁻ ions decreasing the equil. concn. of HN(NO₂)₂ in the melt.

ACCESSION NUMBER: 1998:272635 CAPLUS
 DOCUMENT NUMBER: 128:262437
 TITLE: Kinetics of the thermal decomposition of dinitramide
 3. Kinetics of the heat release during the thermal decomposition of dinitramide ammonium salt in the liquid phase
 AUTHOR(S): Kuzakov, A. I.; Rubtsov, Yu. I.; Andrienko, L. P.; Manelis, G. B.
 CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(3), 379-385
 CODEN: RCBUEY; ISSN: 1066-5285
 PUBLISHER: Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 241 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Composite propellant formulations comprise a dinitramide salt oxidizer, such as ammonium dinitramide, an energetic binder, such as energetically substituted octane and oxirane polymers, a reactive metal, such as aluminum, and other typical propellant ingredients such as curatives and stabilizers. Propellant formulations are useful for min. smoke or reduced smoke applications, preferably include little or no reactive metal. The propellant formulations are able to combust the reactive metal efficiently, possess high burn rates, and produce little or no HCl exhaust gases.
 ACCESSION NUMBER: 1998:250752 CAPLUS
 DOCUMENT NUMBER: 128:284249
 TITLE: Propellant formulations based on dinitramide salts and energetic binders
 INVENTOR(S): Hinshaw, Carol J.; Wardle, Robert B.; Highsmith, Tom K.
 PATENT ASSIGNEE(S): Thiokol Corp., USA
 SOURCE: U.S., 7 pp., Cont.-in-part of U.S. 5,498,303.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:
 PATENT NO. KIND DATE APPLICATION NO. DATE
 US 5741998 A 19980421 US 1996-614303 19960312
 US 5498303 A 19960312 US 1993-52035 19930421
 PRIORITY APPLN. INFO.: US 1993-52035 19930421
 REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 242 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB When exposed to UV or visible radiation, the ammonium- and potassium salts of dinitramides in solns. decomp. to give nitrate and nitrite ions. On the basis of reaction kinetics and product compn., a photolysis mechanism is proposed in which the initial stage is homolysis of the N-N bond.
 ACCESSION NUMBER: 1998:249660 CAPLUS
 DOCUMENT NUMBER: 128:301966
 TITLE: Photolysis of dinitramide salts in solutions
 AUTHOR(S): Gidaspov, B. V.; Tselinskii, I. V.; Shcherbinin, M. B.
 CORPORATE SOURCE: St. Petersburg State Institute of Technology, St. Petersburg, Russia
 SOURCE: Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii) (1997), 67(6), 911-914
 CODEN: RJGCEK; ISSN: 1070-3632
 PUBLISHER: MAIK Nauka/Interperiodica Publishing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 243 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetic regularities of the thermal decompn. of dinitramide in aq. solns. of HNO₃, in anhyd. acetic acid, and in several other org. solvents were studied. The rate of the decompn. of dinitramide in aq. HNO₃ is detd. by the decompn. of mixed anhydride of dinitramide and nitric acid (N₄O₆) formed in the soln. in the reversible reaction. The decompn. of the anhydride is a reason for an increase in the decompn. rates of dinitramide in solns. of HNO₃ as compared to those in solns. in H₂SO₄ and the self-acceleration of the process in concd. aq. solns. of dinitramide. The increase in the decompn. rate of non-dissoc. dinitramide compared to the decompn. rate of the N(NO₂)₂⁻ anion is explained by a decrease in the order of the N=NO₂ bond. The increase in the rate const. of the decompn. of the protonated form of dinitramide compared to the corresponding value for neutral mol. is due to the dehydration mechanism of the reaction.
 ACCESSION NUMBER: 1998:240505 CAPLUS
 DOCUMENT NUMBER: 128:327083
 TITLE: Kinetics of the thermal decomposition of dinitramide.
 2. Kinetics of the reactions of dinitramide with decomposition products and other components of a solution
 AUTHOR(S): Kuzakov, A. I.; Rubtsov, Yu. I.; Manelis, G. B.; Andrienko, L. P.
 CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1998), 47(1), 39-45
 CODEN: RCBUEY; ISSN: 1066-5285
 PUBLISHER: Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 244 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The reactions of $\text{KN}(\text{NO}_2)_2$ with BrF_5 , ClF_5 and IF_7 were studied. The $\text{N}(\text{NO}_2)_2^-$ anion is superior to NO_3^- as a reagent for the controlled, stepwise replacement of two F ligands by a doubly bonded O atom. Thus, $\text{KN}(\text{NO}_2)_2$ readily reacts with BrF_5 at -45 degree, to give KBrO_4 , N_2O and FNO_2 in quant. yield. With ClF_5 at -13 degree, an equimolar mixt. of KClO_4 and KClF_4 was obtained. The formation of KClO_4 is remarkable because with most other F-O exchange reagents, such as NO_3^- , the exchange process cannot be arrested at the ClO_4^- stage and yields FClO_2 as the only product. In the case of IF_7 , deoxygenation of the desired IOF_6^- product occurred resulting instead in the formation of KIF_6 which, in the presence of excess IF_7 , formed the novel $\text{KIF}_6\cdot\text{cntdot.2IF}_7$ adduct.

ACCESSION NUMBER: 1998:210389 CAPLUS

DOCUMENT NUMBER: 128:330372

TITLE: Dinitramide anion as a reagent for the controlled replacement of fluorine by oxygen in halogen

fluorides

AUTHOR(S): Christe, K. O.; Wilson, W. W.

CORPORATE SOURCE: Air Force Res. Lab., Raytheon STX, Propulsion Directorate, Edwards Air Force Base, CA, 93524, USA

SOURCE: Journal of Fluorine Chemistry (1998), 89(1), 97-99

CODEN: JFLCAR; ISSN: 0022-1139

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 245 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetics of thermal decomprn. of dinitramide in eq. and H_2SO_4 solns. were studied in a wide temp. range. The rate of the thermal decomprn. of dinitramide is detd. by the rates of decomprn. of different forms of dinitramide as the acidity of the medium increases: 1st, $\text{N}(\text{NO}_2)_2^-$ anions, then $\text{HN}(\text{NO}_2)_2$ mols., and finally, protonated $\text{H}_2\text{N}(\text{NO}_2)_2^+$ cations. The temp. dependences of the rate consts. of the decomprn. of $\text{N}(\text{NO}_2)_2^-$ (kan)

and $\text{HN}(\text{NO}_2)_2^+$ (k'ac) and the equiv. const. of dissociation of $\text{HN}(\text{NO}_2)_2$ (K_d) were detd.: kan = 1.7 .times. 1017 exp(-20.5 .times. 103/T), s⁻¹, k'ac = 7.9 .times. 1016 exp(-16.1 .times. 103/T), s⁻¹, and K_d = 1.4 .cntdot.10 exp(-2.6 .times. 103/T). The temp. dependences of the decomprn. rate const. of $\text{H}_2\text{N}(\text{NO}_2)_2^+$ (K_d) were estd.: kd = 1012 exp(-7.9 .times. 103/T), s⁻¹ and K_d = 1.1 exp(6.4 .times. 103/T). The kinetic and thermodyn. consts. obtained make it possible to calc. the decomprn. rate of dinitramide solns. in a wide range of temps. and acidities of the medium.

ACCESSION NUMBER: 1998:200927 CAPLUS

DOCUMENT NUMBER: 128:270302

TITLE: Kinetics of thermal decomposition of dinitramide I. Decomposition of different forms of dinitramide

AUTHOR(S): Kazakov, A. I.; Rubtsov, Yu. I.; Manalis, G. B.; Andrienko, L. P.

CORPORATE SOURCE: Institute of Chemical Physics in Chernogolovka, Russian Academy of Sciences, Chernogolovka, 142432, Russia

SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(12), 2015-2020

CODEN: RCBUEY; ISSN: 1066-5285

PUBLISHER: Consultants Bureau

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 246 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The structures, energies at 0 K and enthalpies at 298 K were computed for 37 mols., ions and transition states that were implicated in the thermal decomprn. of ammonium dinitramide. A d. functional procedure was used: DF/B3P86/6-31+G**. These data permit the calcn. of .DELT.A.H (298 K) for

a large no. of possible decomprn. steps; some of these results are presented and discussed. Computed values are reported for the lattice energy of ammonium dinitramide, .DELT.A.H (298 K) = 144 kcal mol⁻¹, its heat of sublimation to $\text{NH}_3 + \text{HN}(\text{NO}_2)_2$, .DELT.A.H (298 K) = 44 kcal mol⁻¹, and the gas phase heat of formation of $\text{HN}(\text{NO}_2)_2$, .DELT.A.H (298 K) = 19 kcal mol⁻¹.

ACCESSION NUMBER: 1998:199396 CAPLUS

DOCUMENT NUMBER: 128:327157

TITLE: Energetics of ammonium dinitramide decomposition steps

AUTHOR(S): Politzer, Peter; Seminario, Jorge M.; Concha, Monica C.

CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148, USA

SOURCE: THEOCHEM (1998), 427, 123-130

CODEN: THEODJ; ISSN: 0166-1260

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 247 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The use of d. functional procedures for computing bond dissociation energies, heats of chem. reactions, and heats of formation is exand. and discussed. The DF/B3P86/6-31+G** combination of functionals and basis set has been found to be quite effective for the first two purposes, and is being extended to heats of formation, although these are presently being obtained with good accuracy at the DF/BP86/6-31G** level. The decomprn. of

the energetic compnd. ammonium dinitramide is considered in some detail. It is suggested that the initial step may be sublimation to $\text{NH}_3 + \text{HN}(\text{NO}_2)_2$, followed by loss of NO_2 from either $\text{HN}(\text{NO}_2)_2$ or its tautomer intermediate steps.

ACCESSION NUMBER: 1998:101279 CAPLUS

DOCUMENT NUMBER: 128:249228

TITLE: Use of density functional methods to compute heats of reactions

AUTHOR(S): Politzer, Peter; Seminario, Jorge M.

CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA

SOURCE: ACS Symposium Series (1998), 677(Computational

Thermochemistry), 359-368

CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

REFERENCE COUNT: 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS

FORMAT RECORD. ALL CITATIONS AVAILABLE IN THE RE

L4 ANSWER 248 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dinitroamide ion was oxidized at a potential of 2.3-2.4 V and reduced at -0.4 V (Ag/AgCl ref. electrode). The photochem. oxidn. of a soln. of a dinitroamide salt and the spin trap, N-tet-butyl-alpha-phenylnitrone (PBN), in acetonitrile or dichloromethane gave rise to a weak 3 times. 5 lines EPR spectrum, assigned to the formal spin adduct of dinitroamide radical and PBN, (NO₂)₂N-PBN.bul.. The reaction is suggested to involve oxidn. of PBN to its radical cation, followed by capture of dinitroamide ion by the latter. The thermal oxidn. of similar solns. gave rise to a different, much more intense EPR spectrum, the hyperfine splitting consts., of which showed the presence of three different nitrogens and the absence of the alpha.-hydrogen of PBN. The spectrum was assigned to O₂N-N(C₂H₅)-NO.bul.)But, formally derived from the dinitroamide spin adduct by elimination of nitrous acid. Mechanistically, this transformation presumably occurs by one-electron oxidn. of (NO₂)₂N-PBN.bul., followed by loss of a proton and NO₂ from the nitrosonium ion intermediate formed. The authors caution safety in the use of explosive dinitroamide salts.

ACCESSION NUMBER: 1998:100928 CAPLUS
 DOCUMENT NUMBER: 128:204511
 TITLE: Reaction between dinitroamide ion and the radical cation of N-tet-butyl-alpha-phenylnitrone. Formal elimination of nitrous acid from a spin adduct
 AUTHOR(S): Eberson, Lennart
 CORPORATE SOURCE: Department Chemistry, Lund University, Lund, S-221 00, Swed.
 SOURCE: Acta Chemica Scandinavica (1998), 52(2), 207-211
 PUBLISHER: Munksgaard International Publishers Ltd.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 249 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 4 refs., of the calcn. of energy output of gun propellant formulations, and attempts to increase the energy of gun propellants using new energetic components. Calcs. were carried out with the ICT computer code based on the virial equation of state with the second and third virial coeffs. and taking into account the oxygen balance, enthalpy of formation, and loading d. Addnl. components discussed include energetic plasticizers, nitramine propellants, and binder systems (e.g., polybutadiene, glycidyl azide polymer, cellulose acetate butyrate, etc.). The performance of these LOVA-propellants was discussed in connection with heat of formation, the oxygen balance, and the polymeric binder system. Finally, energetic compds. such as NTO, CL 20, TNAZ, ANTA and ammonium dinitramide were calcd. using the ICT Thermo. Code.

ACCESSION NUMBER: 1998:94591 CAPLUS
 DOCUMENT NUMBER: 128:142753
 TITLE: Energetic materials and their influence on the energy-output of propellants
 AUTHOR(S): Volk, F.; Bathelt, H.
 CORPORATE SOURCE: Fraunhofer-Institut für Chemische Technologie (ICT), Pfinztal, 76327, Germany
 SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], 2nd, Shenzhen, Peop. Rep. China, Oct. 8-11, 1997 (1997), 341-349. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Publishing House of Ordnance Industry: Beijing, Peop. Rep. China.
 CODEN: 650YAF
 DOCUMENT TYPE: Conference: General Review
 LANGUAGE: English
 REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 250 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The effects of some novel energetic materials (exp. oxidizers) used in crosslinked double-base propellants on the energy and signature characteristics were compared. ADN (ammonium dinitramide) was better than CL-20 and DATH (1,7-diazido-2,4,6-trinitraazheptane) with respect to increasing energy as an oxidizing agent. However, the d-based specific impulse of CL-20 was the largest of the oxidizers. With respect to the required post-combustion treatment, ADN was superior to CL-20 and DATH. Compared with inert binder, glycidyl azide polymer can not only increase the specific impulse but decreases the signature of the propellant.

ACCESSION NUMBER: 1998:94578 CAPLUS
 DOCUMENT NUMBER: 128:142761
 TITLE: Evaluation of novel energetic materials used in low signature propellant
 AUTHOR(S): Guan, Dalin; Shan, Wengang; Wei, Feng
 CORPORATE SOURCE: Xi'an Modern Chemistry Research Institute, Xi'an, 710065, Peop. Rep. China
 SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], 2nd, Shenzhen, Peop. Rep. China, Oct. 8-11, 1997 (1997), 250-255. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Publishing House of Ordnance Industry: Beijing, Peop. Rep. China.
 CODEN: 650YAF
 DOCUMENT TYPE: Conference
 LANGUAGE: English
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 251 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompr. of dinitramide-amine ("onium") salts proceeds via a dissociative mechanism when the pKa of the base is <5.0 and via the unimol. decay of the anion at pKa >7.0. Upon going from the melt to the solid state, the reaction mechanism did not change, and the rate decreased by 1-2 orders of magnitude. No anomalous effects inherent in dinitramide metal salts in the solid phase were obes. during decompr. of the salts.

ACCESSION NUMBER: 1998:70245 CAPLUS
 DOCUMENT NUMBER: 128:142755
 TITLE: Decomposition mechanism of dinitramide onium salts
 AUTHOR(S): Pavlov, A. N.; Nazin, G. M.
 CORPORATE SOURCE: Institute Chemical Physics Chernogolovka, Russian Academy Sciences, Chernogolovka, 142432, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(11), 1848-1850
 PUBLISHER: RCBUEY; ISSN: 1066-5285
 DOCUMENT TYPE: Consultants Bureau
 LANGUAGE: Journal
 REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 252 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unusual regularities are obse. for decompr. of dinitramide metal salts (with Li⁺, Na⁺, Rb²⁺, and (NH₂)₂C⁺) in the solid phase: the solid-phase reaction is 10-103 times faster than that in the melt, its rate has a sharp peak in the region of eutectics melting with the decompr. product [metal nitrate], and it is instantly inhibited by water vapor. In the liq. phase, the rate in the solid phase is lower than that in the liq. phase. No indications of this anomalous behavior are obse. for the decompr. of the dinitramide quenidinium salt.

ACCESSION NUMBER: 1998:70243 CAPLUS
 DOCUMENT NUMBER: 128:104066
 TITLE: Anomalous decomposition of dinitramide metal salts in the solid phase
 AUTHOR(S): Babkin, S. B.; Pavlov, A. N.; Nazin, G. M.
 CORPORATE SOURCE: Institute Chemical Physics Chernogolovka, Russian Academy Sciences, Chernogolovka, 142432, Russia
 SOURCE: Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (1997), 46(11), 1844-1847
 CODEN: RCBUEY; ISSN: 1066-5205
 PUBLISHER: Consultants Bureau
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 253 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A set of model gun propellants was designed, prepd. and characterized to det. the effects of substitution of certain novel ingredients for more mundane ingredients in a simple formulation. Of particular interest was the burning behavior in the presence of an elec. plasma, the conditions found in an electrothermal chem. (ETC) gun. The non-ETC characteristics are discussed. Thermochem. calcs. were performed on a host of formulations which made use of novel ingredients such as CL-20, TNAZ (trinitro azetidine), ADN (ammonium dinitramide), BAMO-ANMO and modified Hytreis. The trends for the variation of the thermochem. properties with the level of the novel ingredients were plotted. Data from these plots were used along with less quant. information concerning processability, probable compatibility and cost to select a few formulations for processing. The formulations were processed to produce small samples. The process conditions are described. Data were developed on the finished propellant to allow interim hazard classifications (IHCs) to be issued. These safety and sensitivity data and other data obtained to characterize these formulations are presented.

ACCESSION NUMBER: 1998:60231 CAPLUS
 DOCUMENT NUMBER: 128:104051
 TITLE: The selection, processing and characterization of a set of gun propellants utilizing novel ingredients
 AUTHOR(S): Peters, Susan T.; Wardle, Robert B.; Walalce, Ingvar A.; Haaland, Andrew C.
 CORPORATE SOURCE: Indian Head Div., Naval Surface Warfare Cent., Indian Head, MD, USA
 SOURCE: Proceedings - International Symposium on Energetic Materials Technology, Phoenix, 1995 (1995), 181-185. American Defense Preparedness Association: Arlington, Va.
 CODEN: 65NDAF
 DOCUMENT TYPE: Conference
 LANGUAGE: English

L4 ANSWER 254 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermodyn. data such as flame temp., mole no., mean mol. wt., heat of explosion and specific energy were discussed as the main influences for prediction of the energy-output of gun propellants. In connection with improved performance, a list of components, some of them new, was established which could be used to increase the energy without increasing the sensitivity of the propellants. Initially, conventional plasticizers were replaced by energetic plasticizers. Taking into account different propellant formulations, the thermodyn. parameters were calcd. which are of interest for improvement of the specific energy. On the other hand, nitramine propellants using different binder systems such as polybutadiene, glycidyl azide polymer, and cellulose acetate butyrate were investigated in a closed bomb in order to evaluate the energy-output and in addn. the reaction products by gas anal. The performance of these LOVA-propellant was discussed in connection with heat of formation, the oxygen balance, and the type of polymeric binder system. Finally, energetic compds. such as NTO, CL-20, TNAZ, ANTA, and ammonium dinitramide (ADN) were calcd. using the ICT Thermodyn. Code, in order to assess the energy-output and to be able to discuss possible improvements in performance.

ACCESSION NUMBER: 1998:60147 CAPLUS
 DOCUMENT NUMBER: 128:117001
 TITLE: Influence of energetic materials on the energy-output of gun propellants
 AUTHOR(S): Volk, F.; Bathelt, H.
 CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technol. (ICT), Pfinztal, 76327, Germany
 SOURCE: Proceedings - International Symposium on Energetic Materials Technology, Phoenix, 1995 (1995), 82-89. American Defense Preparedness Association: Arlington, Va.
 DOCUMENT TYPE: Conference
 LANGUAGE: English

L4 ANSWER 255 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Recently ADN was disclosed to replace AT or AN as a solid oxidizer. 3-N,N-Dinitraminopropionitrile, a key intermediate in the prepn. of ADN, was synthesized from bis(2-cyanoethyl)amine by the sequence: nitration of bis(2-cyanoethyl)amine followed by decyanation by base and the second nitration with NO₂BF₄. 3-N-Nitro-bis(2-cyanoethyl)amine could also be obtained by the oxidn. of the corresponding N-nitroso compd.

ACCESSION NUMBER: 1998:60091 CAPLUS
 DOCUMENT NUMBER: 128:104058
 TITLE: Study on the synthesis of ammonium dinitramide
 AUTHOR(S): Chung, Kyoo-hyun; Sim, Hyun-ho
 CORPORATE SOURCE: Dep. Chem., Inha Univ., Inchon, 402-751, S. Korea
 SOURCE: Journal of the Korean Chemical Society (1997), 41(12), 661-665
 PUBLISHER: Korean Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: Korean

L4 ANSWER 256 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The lattice energies of ammonium, Na, and K salts can be expressed anal. in terms of the total charges of the anions and their computed surface electrostatic potentials and areas. The calcs. were carried out at the HF/6-31+G* level for 17 singly and doubly charged anions. Predicted lattice energies are presented for 10 compds.
 ACCESSION NUMBER: 1998:38958 CAPLUS
 DOCUMENT NUMBER: 128:174336
 TITLE: Relationships between Lattice Energies and Surface Electrostatic Potentials and Areas of Anions
 AUTHOR(S): Politzer, Peter; Murray, Jane S.
 CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
 SOURCE: Journal of Physical Chemistry A (1998), 102(16), 1018-1020
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 257 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method for producing substantially spherical energetic compds. such as ammonium dinitramide (ADN) which minimizes the time during which the ADN is melted comprises providing solid ADN, feeding the ADN at a controlled continuous rate to a heating means, melting the ADN and feeding the melted ADN continuously to a non-solvent cooling fluid maintained at a temp. below the temp. of solidification of the ADN, agitating the cooling fluid in a manner which promotes the formation of droplets of controlled size which solidify in the cooling fluid to produce substantially spherical ammonium dinitramide in a particle size corresponding to the droplet size.
 The ammonium dinitramide is a non-chlorine contg. oxidizer useful in rocket propellant and gas generating devices such as airbag inflators.
 ACCESSION NUMBER: 1998:13916 CAPLUS
 DOCUMENT NUMBER: 128:77246
 TITLE: Process for preparing spherical particles of energetic compounds
 INVENTOR(S): Guimont, John
 PATENT ASSIGNEE(S): United Technologies Corporation, USA
 SOURCE: PCT Int. Appl., 21 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:
 PATENT NO. KIND DATE APPLICATION NO. DATE
 WO 9747571 Al 19971218 WO 1997-US10141 19970611
 W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
 DK, ES, FI, GB, GR, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC,
 LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,
 RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM,
 AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR,
 GB, GR, IE, IT, LU, NL, PT, SE, BE, BJ, CF, CG, CI, CM, GA,
 GN, ML, MR, NE, SN, TD, TG
 AU 9733095 Al 19980107 AU 1997-33095 19970611
 EP 910559 Al 19990428 EP 1997-928947 19970611
 EP 910559 B1 20010228
 R: DE, FR, GB, IT, SE
 JP 2001501698 T2 20010213 JP 1998-501803 19970611
 PRIORITY APPLN. INFO.: US 1996-661437 A 19960611
 WO 1997-US10141 W 19970611

L4 ANSWER 258 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The new energetic material ammonium dinitramide (ADN), NH4(NO2)2, has been investigated with regard to its thermal properties and decompn. behavior. Thermal decompn. of ADN is obstd. after complete melting at 91.5.degree.. The main decompn. pathway is based on the formation of NH4NO3 and N2O followed by the thermal decompn. of NH4NO3 to N2O and H2O at higher temps. Side reactions forming NO2, NO, NH3, N2 and O2 are described and a mechanism for the acid-catalyzed decompn. of hydrogen dinitramide, dissoctn. product of ADN, is proposed.
 ACCESSION NUMBER: 1998:1693 CAPLUS
 DOCUMENT NUMBER: 128:63610
 TITLE: The new energetic material ammonium dinitramide and its thermal decomposition
 AUTHOR(S): Lobbecke, S.; Keicher, T.; Krause, H.; Pfeil, A.
 CORPORATE SOURCE: Fraunhofer Inst. Chemische Technol., Pfingstal,
 D-76318, Germany
 SOURCE: Solid State Ionics (1997), 101-103(Pt. 2), 945-951
 CODEN: SSIO3; ISSN: 0167-2738
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE REFORMAT

L4 ANSWER 259 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of the K, Rb, and Cs salts of dinitramide were detd. K dinitramide is monoclinic, space group P21/n, with a 6.610(5), b 7.191(6), c 9.259(2) .ANG., and .gamma. 97.36(3).degree.; dc = 2.207, z = 4; R = 0.065 for 560 reflections. Rb dinitramide is orthorhombic, space group Pca21, with a 14.244(3), b 7.513(1), c 8.858(2) .ANG.; dc = 2.682, z = 4 (2 mols./2); R = 0.050 for 637 reflections. Cs dinitramide is monoclinic, space group P21/a, with a 14.046(30), b 7.690(1), c 9.860(2) .ANG., and .gamma. 72.99(2).degree.; dc = 3.115, z = 4 (2 mols./2); R = 0.075 for 492 reflections. In the anion of the K salt the nitro groups are not equiv. In the Rb and Cs salts the 2 independent anions have different conformations.
 ACCESSION NUMBER: 1997:788662 CAPLUS
 DOCUMENT NUMBER: 128:82437
 TITLE: Structural features of salts of dinitramide with alkali metals
 AUTHOR(S): Dubivitskii, F. I.; Golovina, N. I.; Pavlov, A. N.; Atovmyan, L. O.
 CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, Russia
 SOURCE: Doklady Akademii Nauk (1997), 355(2), 200-202
 CODEN: DAKNEQ; ISSN: 0869-5652
 PUBLISHER: MAIK Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 260 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A symposium. A comparative study of about 20 simplest primary, secondary, and tertiary amines contg. acyl-, nitroso-, cyano-, nitro- and chloro-substituents was performed by Hartree-Fock and MP2 ab initio methods using various basis sets from the 6-31G* to 6-311G** one. The effect of electron correlation on the vibrational spectra was discussed.
ACCESSION NUMBER: 1997:725648 CAPLUS
DOCUMENT NUMBER: 128:3370
TITLE: Effect of electron correlation on interpretation of vibrational spectra and on energy barrier and structural parameter estimates for simplest amines
AUTHOR(S): Khaikin, L. S.; Palafox, M. Alcolea; Grikina, O. E.
CORPORATE SOURCE: Dep. of Chemistry, Moscow State University, Moscow GSP-3, 119899, Russia
SOURCE: Spectroscopy of Biological Molecules: Modern Trends, (European Conference on Spectroscopy of Biological Molecules), 7th, Madrid, 1997 (1997), 543-544.
Editor(s): Carmona, Pedro; Navarro, Raquel; Hernanz, Antonio. Kluwer: Dordrecht, Neth.
CODEN: 65PQAE
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 261 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The authors report the synthesis of a completely new, stable class of inorg. salts named the dinitramide salts. These salts are based on a newly discovered nitrogen oxide anion known as the dinitramide anion, [N(NO₂)₂]⁻. The dinitramide anion is a uniquely stable, high oxygen d. grouping that can be prep'd. in many salt combinations including the ammonium, cesium and hydrazinium salts. The dinitramide anion has both fundamental scientific interest and practical applications. The authors describe here the synthesis of dinitramide salts and give a preliminary report on their properties.
ACCESSION NUMBER: 1997:667163 CAPLUS
DOCUMENT NUMBER: 127:242328
TITLE: 1,1,3,3-Tetraoxo-1,2,3-triazapropene Anion, a New Oxy Anion Of Nitrogen: The Dinitramide Anion and Its Salts
AUTHOR(S): Robert J.
CORPORATE SOURCE: Functionally Designed Materials Program Chemistry and Chemical Engineering Laboratory, SRI International, Menlo Park, CA, 94025, USA
SOURCE: Journal of the American Chemical Society (1997), 119(40), 9405-9410
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 262 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Unavailable
ACCESSION NUMBER: 1997:662329 CAPLUS
DOCUMENT NUMBER: 127:271750
TITLE: Coordination chemistry and photoreactivity of the dinitramide ion
AUTHOR(S): Trammell, Scott Alan
CORPORATE SOURCE: Univ. of Wyoming, Laramie, WY, USA
SOURCE: (1997) 118 pp. Avail.: UMI, Order No. DA9730363
From: Diss. Abstr. Int., B 1997, 58(4), 1878
DOCUMENT TYPE: Dissertation
LANGUAGE: English

L4 ANSWER 263 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 40 refs., of domestic and international development of high-energy-d. materials, esp. ammonium dinitramide (ADN), -beta.-hexanitrohexaazaisowurtzitane (HNIW), 1,3,3-trinitroazetidine (TNAZ), and high-ring-strain polycyclic alkanes (as candidate high-energy-d. jet fuels).
ACCESSION NUMBER: 1997:661874 CAPLUS
DOCUMENT NUMBER: 127:333562
TITLE: Development and application of high energy density material and high density hydrocarbon fuel
AUTHOR(S): Cheng, Sheng-San
CORPORATE SOURCE: Fourth Division, Chung-Shan Inst. Sci. and Technology, Lung-Tan, Taiwan
SOURCE: Huaxue (1997), 55(2), 71-80
PUBLISHER: Chinese Chemical Society
DOCUMENT TYPE: Journal; General Review
LANGUAGE: Chinese

L4 ANSWER 264 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The crystal structures of the ammonium, 1, Li, 2, K, 3, and Cs, 4, salts of a new N oxy anion, N3O4-, were detd. Crystallogr. data are given. In 1 there are two interpenetrating three-dimensional lattices linked by strong H-bonding interactions between all four ammonium protons and three of the four dinitramide O atoms. Even though 2-4 have similar formula units each has a completely different structure characterized by differing coordination nos. and geometries. The structure of 2 is unique in that it is the only one contg. a dinitramide ion in the C2 conformation predicted by ab initio studies to be the min. energy conformation. There is good agreement between the predicted and exptl. metrical parameters for the C2 conformer of the dinitramide anion.

ACCESSION NUMBER: 1997:660850 CAPLUS
 DOCUMENT NUMBER: 127:255565

TITLE: A New Class of Flexible Energetic Salts: The Crystal Structures of the Ammonium, Lithium, Potassium, and Cesium Salts of Dinitramide

AUTHOR(S): Gilardi, Richard; Flippin-Angerson, J.; George, Clifford; Butcher, Ray J.

CORPORATE SOURCE: Laboratory for the Structure of Matter, Naval Research

SOURCE: Laboratory, Washington, DC, 20375, USA
 Journal of the American Chemical Society (1997), 119(40), 9411-9416
 CODEN: JACSAW; ISSN: 0002-7863

PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 265 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermogravimetric data for the decompr. of ammonium dinitramide (ADN) have been obtained under isothermal and nonisothermal conditions in order to det. the efficacy of different methods for analyzing the kinetics of solid-state reactions. A widely used model-fitting method gives excellent fits to the exptl. data but yields highly uncertain values of the Arrhenius parameters when applied to nonisothermal data because temp. and extent of conversion are not independent variables. Therefore, comparison of model fitting results from isothermal and nonisothermal expts. is practically meaningless. Conversely, model-free isoconversional methods of kinetic anal. yield similar dependencies of the activation energy on the extent of conversion for isothermal and nonisothermal expts. Anal. of synthetic data generated for a complex kinetic model suggests that, in the general case, the identical dependencies are unlikely to result from expts. obtained under isothermal and nonisothermal conditions.

ACCESSION NUMBER: 1997:651152 CAPLUS
 DOCUMENT NUMBER: 127:268496

TITLE: Isothermal and Nonisothermal Reaction Kinetics in Solids: In Search of Ways toward Consensus

AUTHOR(S): Vyazovkin, Sergey; Wight, Charles A.
 CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake City, UT, 84112, USA
 SOURCE: Journal of Physical Chemistry A (1997), 101(44), 8279-8284
 CODEN: JPCAFH; ISSN: 1089-5639

PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 266 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The mechanisms of the hydrolysis reactions of some N-nitrobenzenesulfonamides (YC6H4SO2NHNO2), N-nitrobenzamides (YC6H4CONHNH2) and N-methyl-N-nitrobenzamides (YC6H4CON(CH3)NO2) have been detd. in eq. sulfuric acid using the excess acidity method. Also studied were N-methyl-N-nitroacetamide and nitroureas, with N,N-dinitromethylamine for comparison. N-Nitrobenzene-sulfonamides give either YC6H4SO2+ and NH2NO2 (electron-donating Y) or YC6H4SO2NH2 and NO2- (electron-withdrawing Y) in Al processes; the change in product is reflected in the different rho.+ values found for the two modes of cleavage. N-Nitrobenzamides behave similarly in strong acid, with an Al reaction following presumed O-protonation, but in more moderate acid they exhibit a neutral water-catalyzed hydrolysis mechanism, and in dil. acid the parent N-nitrobenzamides actually show hydroxide catalysis. N-Methyl-N-nitroacetamide shows only the neutral water-catalyzed process. Nitroureas has an Al acid-catalyzed hydrolysis reaction in acid, analogous to the known BI mechanism in base (also visible in dil. sulfuric acid), but has no water reaction; the pH-rate profile for the hydrolysis of this substance is here extended into the non-ideal acid region. N,N-Dinitromethylamine loses NO2+ in an Al process following initial nitro-group protonation, giving N-nitromethylamine which is identifiable by its known hydrolysis rate. Activation parameters, m.m.themod. slopes and rho.+ values given by the excess acidity anal. are shown to be compatible with the postulated mechanisms.

ACCESSION NUMBER: 1997:637117 CAPLUS
 DOCUMENT NUMBER: 127:307034

TITLE: The mechanisms of the hydrolyses of N-nitrobenzenesulfonamides, N-nitrobenzamides and some other N-nitro amides in aqueous sulfuric acid

AUTHOR(S): Cox, Robin A.
 CORPORATE SOURCE: Department of Chemistry, University of Toronto, Toronto, ON, M5S 3H6, Can.
 SOURCE: Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1997), (9), 1743-1750
 CODEN: JCOPBH; ISSN: 0300-9580

PUBLISHER: Royal Society of Chemistry
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 267 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 42 refs., of Fourier-transform IR (FTIR) spectrometry for the study of thermal decompr. of surfaces and flame diagnostics in combustion of solid propellants. Topics discussed include anal. of surface pyrolysis processes by FTIR spectrometry, T-jump FTIR; surface chem. of nitramines, NH4ClO4, NH4NO3, ammonium dinitramide; and the distinction between pyrolysis of thin films vs. surface combustion, and FTIR spectrometry of flames.

ACCESSION NUMBER: 1997:612725 CAPLUS
 DOCUMENT NUMBER: 127:265085

TITLE: Surface pyrolysis phenomena and flame diagnostics by FTIR spectroscopy

AUTHOR(S): Brill, Thomas B.
 CORPORATE SOURCE: Department of Chemistry, University of Delaware, Newark, DE, 19716, USA
 SOURCE: Non-Intrusive Combustion Diagnostics, [Papers presented at the International Symposium on Special Topics in Chemical Propulsion], 3rd, Scheveningen, Neth., May 10-14, 1993 (1994), Meeting Date 1993, 191-208. Editor(s): Kuo, Kenneth K.; Parr, Timothy P.

DOCUMENT TYPE: Conference: General Review
 LANGUAGE: English

Begell House: New York, N. Y.
 CODEN: 65AUAZ

L4 ANSWER 268 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The triazidocarbonium cation, C(N3)3+, was successfully combined with the energetic N(NO2)2- and ClO4- anions in the form of highly energetic salts. The new C(N3)3+BF4- salt was also prep'd., and all compds. were characterized by their material balances and vibrational spectroscopy. Electronic structure calcns. were carried out for C(N3)3+ at the B3LYP/6-31G*, B3LYP/cc-pVDZ, B3LYP/c-pVTZ, and HF/cc-pVDZ levels of theory. At all levels, the energy min. is the planar C3h structure, and the vibrational spectra were assigned and analyzed for this structure. The heats of formation of C(N3)3+N(NO2)2- and C(N3)3+ClO4- were estd. to be endothermic by 252 and 218 kcal/mol, which explain the high explosive power of these salts.

ACCESSION NUMBER: 1997:603141 CAPLUS
 DOCUMENT NUMBER: 127:178392
 TITLE: Novel High-Energy Density Materials. Synthesis and Characterization of Triazidocarbonium Dinitramide, -Perchlorate, and -Tetrafluoroborate

AUTHOR(S): Petrie, Mark A.; Sheehy, Jeffrey A.; Boatz, Jerry A.; Rasul, Golam; Prakash, G. K. Surya; Olah, George A.; Christe, Karl O.

CORPORATE SOURCE: Hughes STX and Rocket Propulsion Directorate, Edwards Air Force Base, CA, 93524, USA
 SOURCE: Journal of the American Chemical Society (1997), 119(38), 8802-8808
 CODEN: JACSAT; ISSN: 0002-7863
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 269 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal stability of an N,N-dinitramide salt of the formula M+[N(NO2)2]- where M+ is a nitrogen-contg. cation, is improved by mixing the N,N-dinitramide salt with a prophosphatrane compd. of the formula P[(RNH2CH2)3N] where R, R' and R'' are the same or different and are aryl or alkyl. A new compn. of matter is formed by mixing the N,N-dinitramide salt and the prophosphatrane compd.

ACCESSION NUMBER: 1997:595007 CAPLUS
 DOCUMENT NUMBER: 127:178410
 TITLE: Prophosphatrane as stabilizer in thermal stabilization
 of propellant oxidizer of N,N-dinitramide salts

INVENTOR(S): Russell, Thomas P.; Mishra, Indu B.
 PATENT ASSIGNEE(S): United States Dept. of the Navy, USA
 SOURCE: U. S. Pat. Appl., 23 pp., Avail. NTIS Order No. PAT-APPL-8-708 001.
 CODEN: XAXXAV

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 708001	A0	19970603	US 1996-708001	19960826
US 5780769	A	19980714		

PRIORITY APPLN. INFO.: US 1996-708001 19960826
 OTHER SOURCE(S): MARPAT 127:178410

L4 ANSWER 270 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Temp.-controlled gas cell and thin-film laser pyrolysis techniques were used to investigate the condensed-phase thermal decompn. of ammonium dinitramide (ADN). Gas cell expts. were performed at heating rates of 10-2-10-1 .degree.C/s and in a temp. region 20-250.degree.. Pulsed CO2 laser heating of thin ADN films has allowed heating rates of 107 .degree.C/s and temps. of .apprx. 630.degree. to be reached. The thermal decompn. products were monitored by FTIR spectroscopy. The primary decompn. products were N2O and NO2, with NO produced at a later stage in the reaction. No evidence was found for participation of dinitramide acid in the reaction mechanism. The fact that the same initial products were obtd. over a wide range of temps. and heating rates showed that this mechanism can be used to model the initial stages of combustion of ADN.

ACCESSION NUMBER: 1997:575525 CAPLUS
 DOCUMENT NUMBER: 127:1763972
 TITLE: Thermal Decomposition of Ammonium Dinitramide at Moderate and High Temperatures

AUTHOR(S): Vayazovkin, Sergey; Wight, Charles A.
 CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake City, UT, 84112, USA
 SOURCE: Journal of Physical Chemistry A (1997), 101(39), 7217-7221
 CODEN: JPCAFH; ISSN: 1089-5639
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 271 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A series of exptl. studies performed on sandwich propellants, in which a matrix lamina of particulate oxidizer and polymeric binder is sandwiched between two ammonium perchlorate (AP) laminae. The catalyst (ferric oxide) was incorporated in the matrix lamina. The variables are pressure (0.345-6.9 MPa), matrix lamina thickness, catalyst concn., matrix mixt. ratio, type of oxidizer and binder, and the dispersion ability of the catalyst. Near-surface reactions assocd. with the particulate AP/binder contact lines on the burning surface assume significance in the presence of the catalyst. For compns. contg. fine particulate oxidizer matrixes, the catalyst enhances the exothermic reactions at and/or very close to the surface along the oxidizer-binder contact lines. These reactions were further augmented by the presence of the leading-edge portion of the diffusion flame above the interface of the matrix and AP laminae.

ACCESSION NUMBER: 1997:524888 CAPLUS
 DOCUMENT NUMBER: 127:178378
 TITLE: Mechanism of burning rate enhancement of composite solid propellants by ferric oxide

AUTHOR(S): Chakravarthy, Satyanarayanan R.; Price, Edward W.; Sigman, Robert K.
 CORPORATE SOURCE: Georgia Institute of Technology, Atlanta, GA, 30332-0150, USA
 SOURCE: Journal of Propulsion and Power (1997), 13(4), 471-480
 CODEN: JPPOEL; ISSN: 0748-4658
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 272 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A high-speed photog. study was performed of the rapid deformation of ammonium dinitramide (ADN) and glycidyl azide polymer (GAP) by drop-wt. impact. ADN was more sensitive than ammonium perchlorate. Both materials were suggested as potentially useful oxidizers in explosive and propellant applications. ADN was sensitized by both hard high-m.p. grits (60.-mu.m borosilicate or Pyrex glass) and brittle polymers. High-d. polyethylene suppressed deflagration in this material. Heat-sensitive film was used to confirm that the events seen using high-speed photog. were indeed deflagrations. GAP was insensitive when impacted in this app., even in the presence of additives or gas bubbles.

ACCESSION NUMBER: 1997:524987 CAPLUS
 DOCUMENT NUMBER: 127:137821
 TITLE: High-speed photographic study of the impact response of ammonium dinitramide and glycidyl azide polymer
 AUTHOR(S): Agrawal, J. P.; Walley, S. M.; Field, J. E.
 CORPORATE SOURCE: University of Cambridge, Cambridge, CB3 0HE, UK
 SOURCE: Journal of Propulsion and Power (1997), 13(4), 463-470
 CODEN: JPPOEL; ISSN: 0748-4658
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 273 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium dinitramide (ADN), NH4N(NO₂)₂, a new energetic compd. was investigated as a potential replacement for NH₄NO₃ or NH₄ClO₄ as an oxidizer in solid-fuel rocket propellants. The stability of pure ADN and of mixts. with 2% of different stabilizers was investigated by thermogravimetric analyses (TGA) and differential scanning calorimetry (DSC). The DSC measurement of pure ADN showed melting onset at 91.5.degree. followed by thermal decomprn. up to 200.degree.. While the addn. of 2% MgO and NaBO₂ showed no effect on the thermal decomprn. of ADN, the addn. of the same amt. of urotropin, 2-nitrodiphenylamine, and akardit shifted the onset of ADN thermal decomprn. to higher temps.

ACCESSION NUMBER: 1997:522184 CAPLUS
 DOCUMENT NUMBER: 127:178385
 TITLE: Thermal decomposition and stabilization of ammonium dinitramide (ADN)
 AUTHOR(S): Lobbecke, S.; Krause, H.; Pfeil, A.
 CORPORATE SOURCE: Fraunhofer-Inst. Chemische Technologie, Pfingstal, D-76318, Germany
 SOURCE: International Annual Conference of ICT (1997), 28th(Combustion And Detonation), 112.1-112.8
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 274 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Combustion behavior of ammonium dinitramide (ADN) was studied in the form of both pressed strands and single crystals. Self-sustained combustion of strands pressed into 4 mm i.d. Plexiglas tubes begins at 0.2 MPa. Within the pressure of 0.2-1.5 and 10-36 MPa the combustion process was stable, whereas within the interval of 2-8 the burning rate turned out to be unstable and might vary in more than 2 times at the same pressure. Small amts. of paraffin reduce the low-pressure limit of ADN combustion to the subatmospheric region. The temp. distribution in the ADN combustion wave was measured at 0.1-4.1 MPa. The ADN decomprn. reactions in the condensed zone to form NH₄NO₃ (AN) and N₂O play a dominant role in burning at low pressures. The ADN surface temp. corresponds to the temp. of AN dissociation to yield NH₃ and HNO₃. Temp. measurements suggest 3-zone flame structure of ADN.

ACCESSION NUMBER: 1997:522174 CAPLUS
 DOCUMENT NUMBER: 127:163992
 TITLE: Combustion behavior and flame structure of ammonium dinitramide
 AUTHOR(S): Fogelzang, Alexander E.; Sinditskii, Valery P.; Egorschhev, Viacheslav Y.; Levenshikov, Anton I.; Serushkin, Valeriy V.; Kolesov, Vasiliy I.
 CORPORATE SOURCE: Mendeleev Univ. Chemical Technology, Moscow, 125047, Russia
 SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 99.1-99.14
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 275 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium dinitramide and ammonium nitrate (ADN) thermal decomprn. was studied by time-of-flight mass-spectroscopy at .apprx.10-6 and 100 Torr, and 1 atm, and 100-300.degree.. The anal. of the obtained data showed mass-spectra of ADN decomprn. products at 1 atm and 100 torr differed significantly from mass-spectra of ADN decomprn. products in vacuum, esp. the ratio I₄₆/I₁₇, which was 1.5-1.7 in the first case, whereas in vacuum I₄₆/I₁₇ = 0.06-0.16. The thermal decomprn. of ammonium nitrate was carried out at 10-7 Torr. In this case, the reaction products are NH₃ and HNO₃. With decreasing pressure, the rate of ADN decomprn. increased and HNO₃ mole fraction in the decomprn. products decreased. The reason is that the process of ADN dissociative sublimation into NH₃ and nitronitramide [HN(NO₂)₂], followed by decomprn. of the latter to give N₂O, NO, and H₂O, became dominant with decreasing pressure.

ACCESSION NUMBER: 1997:522128 CAPLUS
 DOCUMENT NUMBER: 127:207727
 TITLE: Thermal decomposition of ammonium dinitramide and ammonium nitrate
 AUTHOR(S): Korobeinichev, Oleg; Shmakov, Andrey; Paletsky, Alexander
 CORPORATE SOURCE: Siberian Branch, Inst. Chemical Kinetics Combustion, Novosibirsk, 630090, Russia
 SOURCE: International Annual Conference of ICT (1997), 28th(Combustion and Detonation), 41.1-41.11
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 276 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Data on the optical combustion properties of ammonium dinitramide (ADN) systems as powerful oxidants for propellants and explosives are given from
 expts. using ADN mixed with paraffin in a mass ratio of 90:10 corresponding to a max. specific impulse. Burning rates of 50 mm/s were measured at 7 MPa and a pressure exponent of 0.8 was detd. Spectroscopic investigations yield to flame temp. in the range of the adiabatic flame temp. of 2960 K and give first hints to the chem. reaction mechanism of the ADN combustion with hydrocarbons.
 ACCESSION NUMBER: 1997:522099 CAPLUS
 DOCUMENT NUMBER: 127:163977
 TITLE: Burning behavior of ADN-mixtures
 AUTHOR(S): Weiser, Volker; Eisenteich, Norbert; Bayer, Andrea;
 Finsel, Martin; Menke, Klaus
 CORPORATE SOURCE: Fraunhofer-Instit. Chemische Technologie, Pfinztal,
 D-76318, Germany
 SOURCE: International Annual Conference of ICT (1997),
 28th(Combustion and Detonation), 8.1-8.14
 CODEN: IACIEQ; ISSN: 0722-4087
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: German

L4 ANSWER 277 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 21 refs., of synthetic methods, structure, and physicochem.
 and chem. properties of dinitramide [HN(NO₂)₂] and its salts with mono- and divalent metals of Groups I, II, VII, and VIII of the Periodic Table, as well as nitrogen bases (ammonia, hydrazine, hydroxylamine, primary, secondary, and tertiary amines, quaternary aliph. amines, amidines, guanidines, etc.).
 ACCESSION NUMBER: 1997:502383 CAPLUS
 DOCUMENT NUMBER: 127:207705
 TITLE: Chemistry of dinitramine and its salts
 AUTHOR(S): Luk'yanov, O. A.; Tartakovskii, V. A.
 CORPORATE SOURCE: Insr. Org. Khim. im. Zelinskogo, Russian Academy Sciences, Russia
 SOURCE: Rossiiskii Khimicheskii Zhurnal (1997), 41(2), 5-13
 CODEN: RKHZEZ; ISSN: 1024-6215
 PUBLISHER: Rossiiskoe Khimicheskoe Obozrenie im. D. I. Mendeleeva
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Russian

L4 ANSWER 278 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermal properties and decompr. behavior of the new energetic material ammonium dinitramide (ADN) were investigated. Thermal decompn. of ADN is obstd. after complete melting at 91.5 degree.. The main decompr. pathway is based on the formation of NH₄NO₃ and N₂O followed by the thermal decompr. of NH₄NO₃ to N₂O and H₂O at higher temps. Side reactions forming NO₂, NO, NH₃, N₂, and O₂ are described and a mechanism for the acid-catalyzed decompr. of hydrogen dinitramide, dissoci. product of ADN, is proposed.
 ACCESSION NUMBER: 1997:501965 CAPLUS
 DOCUMENT NUMBER: 127:178384
 TITLE: Thermal analysis of ammonium dinitramide
 decomposition
 AUTHOR(S): Lobbecke, Stefan; Krause, Horst H.; Pfeil, Achim
 CORPORATE SOURCE: Fraunhofer-Institut Chemische Technologie, Pfinztal-Berghausen, D-76327, Germany
 SOURCE: Propellants, Explosives, Pyrotechnics (1997), 22(3), 184-188
 CODEN: PEPYD5; ISSN: 0721-3115
 PUBLISHER: Wiley-VCH
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 279 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dinitramide salts of ammonia (ADN), hexamethylenetetramine (HDN), potassium (KDN), and sodium (NaDN) showed a linear relationship between the differential scanning calorimetry (DSC) rate of decompr. at the peak max. and the dielec. loss (tan.delta.) values at the low-temp. transition peak. As the cation basicity increased, in the series ADN < HDN < KDN < NaDN, increases in the low-temp. transition peak, the energy barrier for relaxation, and the decompr. peak temp. were obstd., and a decrease in the tan.delta. value at the low-temp. transition peak, sp. heat capacity, and the rate and enthalpy of decompr. The more basic salts were more thermally stable (i.e., higher decompr. temp.) and less energetic (i.e., lower enthalpy of decompr.). The more internal free vol. (disorder) present in these salts, the higher the rates of relaxation and decompr. Five Al powders of different surface areas were analyzed by DSC in platinum sample pans; the enthalpy and rate of oxidn. increased as the particle size of Al decreased, and the enthalpy of the Al melt decreased. Thermogravimetric (TG) anal. showed a two-step wt. gain in the oxidn. of Al, with plateaus in the 650 and 1130 degree. regions; the percent wt. gain increased as the particle size of Al decreased. Variable DSC and TG heating rate studies showed that the activation energies for the first step in the oxidn. process increased with increasing particle size of the Al.
 ACCESSION NUMBER: 1997:483697 CAPLUS
 DOCUMENT NUMBER: 127:192630
 TITLE: Low/high temperature relationships in dinitramide salts by DSC/DSC and study of oxidation of aluminum powders by DSC/TG
 AUTHOR(S): Tompa, A. S.; Boswell, R. F.; Skahan, P.; Gotzmer, C.
 CORPORATE SOURCE: Indian Head Division, Naval Surface Warfare Center, Indian Head, MD, 20640, USA
 SOURCE: Journal of Thermal Analysis (1997), 49(3), 1161-1170
 CODEN: JTREA9; ISSN: 0368-4466
 PUBLISHER: Akademiai Kiado
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 280 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal decompn. of ammonium dinitramide (ADN) and potassium dinitramide (KDN) were examp. neat and in soln. Isothermal kinetics were measured (160-220 .degree.C) by monitoring dinitramide loss and were found to be first-order. Ammonium ion loss and gas formation were not good measurements of ADN decompn. since they reflect the fate of the ADN decompn. product ammonium nitrate. Kinetics of decompn. were nearly identical for ADN neat (protoe- and deuterio-), ADN in water (1 or 20 wt.-%), ADN in various pH aq. buffers, and for aq. KDN (1 wt.-% in water or deuterium oxide). The activation energy, calcd. for ADN, was about 40 kcal/mol (167 kJ/mol) for neat ADN and 37 kcal/mol (155 kJ/mol) for aq. solns. of ADN. Decompn. of ADN in aq. buffers suggested that under the conditions of these studies decompn. of dinitramide or its parent acid proceeds at about the same rate at pH 3, pH 5, and unbuffered but decreased by about 40% at pH 9. Neat KDN was unique in that it decompn. increased to be comparable to that of ADN when KDN was aq. or when any ammonium salt was mixed with KDN. Nitrous oxide and nitrate (or nitric acid) were the principal decompn. products of dinitramide. Nitrogen gas was also formed, to a significant extent in the decompn. of ADN and to a small extent in that of KDN. Nitrogen gas resulted from the interaction of ammonium or ammonia with the nitrate or gaseous nitrogen oxides. Studies of ¹⁵N-labeled ADN confirm that one N=NO₂ bond remains intact, forming nitrous oxide, while the other nitro group combines with the nitrogen from ammonium to form nitrogen gas. Several decompn. pathways consistent with these findings are considered.

ACCESSION NUMBER: 1997:440233 CAPLUS
 DOCUMENT NUMBER: 127:141230
 TITLE: Thermal Decomposition Studies on Ammonium Dinitramide (ADN) and ¹⁵N and ²H Isotopomers
 AUTHOR(S): Oxley, J. C.; Smith, J. L.; Zheng, W.; Rogers, E.; Coburn, M. D.
 CORPORATE SOURCE: Chemistry Department, University of Rhode Island, Kingston, DE 02881, USA
 SOURCE: Journal of Physical Chemistry A (1997), 101(31), 5646-5652
 PUBLISHER: JPCAFH; ISSN: 1089-5639
 DOCUMENT TYPE: American Chemical Society
 LANGUAGE: English

L4 ANSWER 281 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermal decompn. of ammonium dinitramide (ADN) has been studied by differential scanning calorimetry (DSC) and thermal gravimetry combined with mass spectrometry (TG-MS). ADN decompn. in the range 130-230.degree. with an overall heat release of 240 .+-.. 40 kJ mol⁻¹. The product gases have been identified by MS as NH₃, H₂O, NO, N₂O, NO₂, HONO, and HNO₃. The global activation energy detd. from TG expts. decreases from 175 .+-.. 20 kJ mol⁻¹ at the beginning of the reaction to 125 .+-.. 20 kJ mol⁻¹ when the reaction is near completion. Expts. conducted at different carrier gas flow rates indicate that the reaction is catalyzed by product gases released during the reaction. A condensed phase ionic reaction mechanism is proposed, in which ammonium nitrate and ammonium mononitramide (NH₄NO₂) are formed as intermediates in two competing channels.

ACCESSION NUMBER: 1997:440148 CAPLUS
 DOCUMENT NUMBER: 127:53016
 TITLE: Ammonium Dinitramide: Kinetics and Mechanism of Thermal Decomposition
 AUTHOR(S): Vyazovkin, Sergey; Wight, Charles A.
 CORPORATE SOURCE: Department of Chemistry, University of Utah, Salt Lake City, UT, 84112, USA
 SOURCE: Journal of Physical Chemistry A (1997), 101(31), 5653-5658
 PUBLISHER: JPCAFH; ISSN: 1089-5639
 DOCUMENT TYPE: American Chemical Society
 LANGUAGE: English

L4 ANSWER 282 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Three biguanidinium salts of the energetic dinitramide anion were prep'd. and structurally characterized from room-temp. x-ray diffraction data. Biguanidinium mono-dinitramide, (BIGH)(DN), is triclinic, space group P.hivin.1, a 4.3686(4), b 9.404(2), c 10.742(1) .ANG., alpha. 83.54(1), beta. 80.386(9), gamma. 79.93(1).degree., Z = 2, dc = 1.62, R = 0.041. Biguanidinium bis-dinitramide, (BIGH₂)(DN)₂, is monoclinic, space group C2/c, a 11.892(2), b 8.131(1), c 13.038(2) .ANG., beta. 115.79(1).degree., Z = 4, dc = 1.844, R = 0.0533. Biguanidinium bis-dinitramide monohydrate, (BIGH₂)(DN) 2.H₂O, is orthorhombic, space group P212121, a 6.4201(6), b 13.408(1), c 14.584(2) .ANG., Z = 4, dc = 1.76, R = 0.040. At. coordinates are given. All three structures were characterized by extensive H bonding. Both the mono- and diprotонated cations consist of two planar halves twisted with respect to each other. The dinitramide anion has a surprisingly variable and asym. structure. The two halves of the anion are twisted with respect to each other; however, the twist varies from 5.1 to 28.9.degree.. The two ends of the anion have significantly different geometries, e.g. the 'equiv.' N-N bond lengths differ by up to 0.045 .ANG..

ACCESSION NUMBER: 1997:411189 CAPLUS
 DOCUMENT NUMBER: 127:143091
 TITLE: Energetic materials: the preparation and structural characterization of three biguanidinium dinitramides
 AUTHOR(S): Martin, Anthony; Pinkerton, A. Alan; Gilardi, Richard D.; Bottaro, Jeffrey C.
 CORPORATE SOURCE: Dep. Chem., Univ. Toledo, Toledo, OH, 43606, USA
 SOURCE: Acta Crystalllographica, Section B: Structural Science (1997), B53(3), 504-512
 PUBLISHER: Munksgaard
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 283 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Thermodyn. calcns. were done for emulsion explosive systems contg. energy-supplying additives (e.g., gunpowder, NH₄ dinitramide). The additives had a pos. effect on the explosive systems. A NH₄NO₃-water-gunpowder-Al mixt. provided a detonation rate of >7000 m/s and detonation pressure of .apprx.18 GPa. Substitution of NH₄NO₃ with NH₄ dinitramide in the NH₄NO₃-water-satd. hydrocarbon-oleic acid system and substitution of glass microspheres with gunpowder increased brisance of the emulsion explosives by .gtoreq.60%.

ACCESSION NUMBER: 1997:391665 CAPLUS
 DOCUMENT NUMBER: 127:150723
 TITLE: Improvement of commercial emulsion explosives using conversion components
 AUTHOR(S): Odintsov, V. V.; Pepekin, V. I.; Korsunskii, B. L.
 CORPORATE SOURCE: Inst. Kh. Fiz. im. N. N. Semenova, RAN, Moscow, Russia
 SOURCE: Khimicheskaya Fizika (1997), 16(4), 94-105
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 284 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Binder interactions were simulated for cryst. ADN (ammonium dinitramide) using five general binder structures: polyethylene oxide, polybutadiene, several hexamethylene-based carbamates, an octamer of polydimethylsiloxane, and a proprietary complex ester-nitramine binder.

A mol. stress-dynamics technique was used to compare the relative energy requirements needed to force apart the minimized binder-ADN pairs, showing differences in the energy trajectories. This technique as well as the results and anal. of the model was discussed. ADN showed the highest interaction energies between those polymers with the highest heteroatom and multiple bonding contents, as interpreted from the stiffness and strength definitions of the energy trajectories. Interpretation of mol. structure-to-interaction energies was not straight-forward.

ACCESSION NUMBER: 1997:375424 CAPLUS
DOCUMENT NUMBER: 127:53017
TITLE: Molecular dynamics of binder-ADN interaction
AUTHOR(S): Iwamoto, N.
CORPORATE SOURCE: Weapons Division, Naval Air Warfare Center, China Lake, CA, 93555-6001, USA
SOURCE: Proceedings of the ERDEC Scientific Conference on Chemical and Biological Defense Research, Aberdeen Proving Ground, Md., Nov. 15-18, 1994 (1996). Meeting Date 1994, 493-500. Editor(s): Berg, Dorothy A. National Technical Information Service: Springfield, Va.
CODEN: 64NAAX
DOCUMENT TYPE: Conference
LANGUAGE: English

L4 ANSWER 285 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The thermal decompr. of 1,3,3-trinitroazetidine (TNAZ) and related 3,3-dinitroazetidine (DNAZ⁺) salts was examd. neat and in soln. TNAZ kinetics were found (160-250 degree.C) to be first-order and nearly identical neat and in benzene, with an activation energy of 46.6 kcal/mol (195 kJ/mol). The DNAZ⁺ salts were less thermally stable than TNAZ, and neat did not decomp. in a first-order fashion. However, in aq. soln. the DNAZ⁺ salts did decomp. following first-order kinetics; their rates were similar with minor differences apparently related to the strength of the anion as a conjugate base. Like simple nitramines such as dimethylnitramine, TNAZ tended to form N2O rather than N₂, but unlike other nitramines it formed about as much NO as N2O. TNAZ isotopomers labeled with ¹³C and with ¹⁵N were prep'd. and used to identify the origin of the decompr. gases and the identity of the condensed-phase products. Early in the decompr. of TNAZ, most of the NO came from the nitro group attached to the azetidinium ring nitrogen. Most of the N2O was the result of the nitro groups interacting with each other, while the majority of the

N2 contained one nitrogen from the ring. Many condensed products have been identified, but five stand out because they are formed in the thermolysis of TNAZ and the three DNAZ⁺ salts [NO₃⁻, Cl⁻, N(NO₂)₂⁻]. These are 3,5-dinitropyridine (M, always a minor product), 1-formyl-3,3-dinitroazetidine (L), 1,3-dinitroazetidine (K), 1-nitroso-3,3-dinitroazetidine (E), and 1-nitroso-3-nitroazetidine (G); the identity of the first four has been confirmed by use of authentic samples. Of these five, the last four have been shown to interconvert with TNAZ and each other under the conditions of these expts. This study confirms the presence of two competitive TNAZ decompr. pathways. Under the conditions of this study, N-NO₂ homolysis is slightly favored, but products, such as K, resulting from C-NO₂ scission, are also well represented.

ACCESSION NUMBER: 1997:332787 CAPLUS
DOCUMENT NUMBER: 127:50227
TITLE: Thermal Decomposition Pathways of 1,3,3-Trinitroazetidine (TNAZ), Related 3,3-Dinitroazetidium
AUTHOR(S): Salts, and 15N, ¹³C, and ²H Isotopomers Oxley, Jimmie; Smith, James; Zheng, Weiyi; Rogers, Evan; Coburn, Michael
CORPORATE SOURCE: Department of Chemistry, University of Rhode Island, Kingston, RI, 02881-0809, USA
SOURCE: Journal of Physical Chemistry A (1997), 101(24), 4375-4383
PUBLISHER: CODEN: JPCAFH; ISSN: 1089-5639
DOCUMENT TYPE: American Chemical Society
LANGUAGE: Journal
English

L4 ANSWER 286 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide (ADN), a potential rocket fuel, decomps. in water forming NO₂. The chem. of this ADN-released NO₂ in oxygenated biol. systems is complex both in the no. of potential chem. species and in the no. of parallel and consecutive reactions that can theor. occur. High-pressure liq. chromatog. (HPLC) studies revealed ADN fragmented DNA. Damage to DNA std. solns. was caused by at least two major pathways, one arising from reactions of NO₂ with oxygen and one arising from a reaction with superoxide. The radical species generated when ADN is incubated with std. solns. of DNA, pH 7.5, in the presence of the spin trap agent n-tert-butyl-.alpha.-nitronate (PBN) was compared with the PBN-radical adducts generated in the presence of ADN and superoxide of ADN and hydrogen peroxide (H₂O₂). The ADN-induced PBN radical adducts increased linearly over the 90-min study period. The values of peak intensity in the presence of superoxide in the presence of H₂O₂, were 828% and 7.08%, resp., of the ADN-induced radicals alone. The synergistic effects of ADN with superoxide may provide an understanding of the sensitivity of the

rat blastocyst to ADN at the preimplantation stage of development and the lack of toxicity in *in vivo* studies in tissues high in catalase.
ACCESSION NUMBER: 1997:325851 CAPLUS
DOCUMENT NUMBER: 126:302438
TITLE: Effects of reactive oxygen and nitrogen species induced by ammonium dinitramide decomposition in aqueous solutions of deoxyribose nucleic acid
AUTHOR(S): Steel-Goodwin, Linda; Kuhlman, K. J.; Miller, Clay; Pace, M. D.; Carmichael, A. J.
CORPORATE SOURCE: Tri-Service Toxicology, Armstrong Laboratory, Wright-Patterson AFB, OH, 45433, USA
SOURCE: Annals of Clinical and Laboratory Science (1997), 27(3), 236-245
PUBLISHER: CODEN: ACLSCP; ISSN: 0091-7370
DOCUMENT TYPE: Institute for Clinical Science
LANGUAGE: English

L4 ANSWER 287 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The pressure/temp. and reaction phase diagram for dinitro azetidinium dinitramide (DNAZ-DN) has been delineated using a high-pressure diamond anvil cell with Fourier transform IR spectroscopy, Raman spectroscopy, and optical polarizing light microscopy. The phase diagram was dtd. between ambient pressure and 10.0 GPa over the temp. range from -75 degree.C to decompr. temps. or >150 degree.C. The phase diagram delineates the melt curve for .alpha.-DNAZ-DN, a reversible phase transformation in .alpha.-DNAZ-DN forming a new high-pressure polymorph, .beta.-DNAZ-DN, and also identifies the pressure and temp. conditions for solid state decompr. of .beta.-DNAZ-DN. FTIR and Raman spectra were obtained for both the .alpha. and .beta. phases as a function of pressure at room temp. The new high-pressure .beta. polymorph could not be retrieved to ambient conditions.
ACCESSION NUMBER: 1997:247910 CAPLUS
DOCUMENT NUMBER: 126:277147
TITLE: Pressure/Temperature and Reaction Phase Diagram for Dinitroazetidinium Dinitramide
AUTHOR(S): Russell, T. P.; Piermarini, G. J.; Miller, P. J.
CORPORATE SOURCE: Chemistry Division, Naval Research Laboratory, Washington, DC, 20375, USA
SOURCE: Journal of Physical Chemistry B (1997), 101(18), 3566-3570
PUBLISHER: CODEN: JPCBFK; ISSN: 1089-5647
DOCUMENT TYPE: American Chemical Society
LANGUAGE: Journal
English

L4 ANSWER 288 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Laser-supported deflagration of ADN, AP, HNF, TNAZ, RDX, or HMX in sandwich configurations with various energetic and nonenergetic binders was studied. Planar laser-induced fluorescence (PLIF) was used to measure the two-dimensional NH, OH, and CN species profiles for these sandwiches. For the HNF sandwiches, obvious diffusion flames were present at low pressure, but they were weak, further from the surface than the HNF monopropellant flame and not expected to be burn-rate controlling. ADN was found to have diffusion flames with energetic binders at low pressures, but they were very far from the surface. The high burn rate of ADN at pressures above 3 atm left the binder behind, and the diffusion flames became weak. AP showed clear evidence for strong close diffusion flames with binder and even with other oxidizers. The combination of HMX or TNAZ with AP leads to obvious diffusion flame interactions: the highly reactive AP-decomp. products accelerated the nitramine dark zone kinetics and caused the secondary flame to hold on the interface region. This leads to higher heat feedback in the interface region and a somewhat faster nitramine regression rate. TNAZ, RDX, and HMX were not found to have any diffusion flames with energetic or nonenergetic binders: the monopropellant flame was lifted in the region around the binder. These results imply that ADN, HNF, TNAZ, RDX, and HMX propellants will not have the clear particle size ballistic tailorability seen with AP propellants, because diffusion flames appear to be strong and close to the surface (and therefore burn-rate controlling) only in AP propellants.

ACCESSION NUMBER: 1997:246520 CAPLUS
 DOCUMENT NUMBER: 126:295264
 TITLE: Solid propellant diffusion flame structure
 AUTHOR(S): Parr, T. P.; Hanson-Parr, D. M.
 CORPORATE SOURCE: Combustion Diagnostics Laboratory, Research Division, Naval Air Warfare Center, China Lake, CA, 93555-6100, USA
 SOURCE: Symposium (International) on Combustion, [Proceedings] (1996), 26th(Vol. 2), 1981-1987 CODEN: SYMCAQ; ISSN: 0062-0784
 PUBLISHER: Combustion Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 289 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dinitramic acid $\text{HN}(\text{NO}_2)_2$ is manufd. by nitration of a compd. selected from NH_2NO_2 , $\text{NH}_4\text{NH}_2\text{CO}_2$, $\text{NH}_2\text{SO}_3\text{H}_2$, $\text{NH}(\text{SO}_3\text{H})_2$, and its salts with metal cations or org. cations, e.g. $\text{NH}(\text{SO}_3\text{NH}_4)_2$, and the salts having the formula $\text{M}^{+} \cdot (\text{NO}_2)_2^-$ where M is a metal cation or a nitrogen-contg. cation and $n = 1-3$ are manufd. by neutralization of dinitramic acid with a neutralizing agent, e.g. ammonia. The salt mixt. formed in the neutralization is passed through a column contg. an adsorbing agent which adsorbs the dinitramide salt and the dinitramide salt is eluted with an elution agent consisting of hot water and/or a polar org. solvent. is selected from a class consisting of activated carbon, silica gel and zeolites. The org. solvent. is selected from acetone, acetonitrile, 2-propanol and other lower alcs. and their mixts. and the adsorbing agent is selected from activated carbon, silica gel and zeolites. The dinitramide salts can be used as oxidizers in solid propellants.

ACCESSION NUMBER: 1997:238400 CAPLUS
 DOCUMENT NUMBER: 126:227269
 TITLE: Manufacture of dinitramic acid and its salts for solid propellants
 INVENTOR(S): Langlet, Abraham; Oestmark, Henric; Wingborg, Niklas
 PATENT ASSIGNEE(S): Foerssvarets Forskningsanstalt, Swed.: Langlet, Abraham; Oestmark, Henric; Wingborg, Niklas
 SOURCE: PCT Int. Appl., 16 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9706099	A1	19970220	WO 1996-SE976	19960726
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KB, LS, MW, SD, SZ, US, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM				
SE 9503326	A	19970209	SE 1995-3326	19950926
SE 516719	C2	20020219		
CA 2227625	AA	19970220	CA 1996-2227625	19960726
AU 9665396	A1	19970305	AU 1996-65396	19960726
AU 703767	B2	19990401		
EP 843647	A1	19980527	EP 1996-925240	19960726
EP 843647	B1	20010411		
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL, SE, PT, IE, FI				
BR 9609993	A	19990706	BR 1996-9993	19960726
JP 11514323	T2	19991207	JP 1996-508366	19960726
IL 122880	A1	20001031	IL 1996-122880	19960726
AT 200470	E	20010415	AT 1996-925240	19960726
ES 2159039	T3	20010916	ES 1996-925240	19960726
US 5976483	A	19991102	US 1998-983462	19980113
NO 9800534	A	19980206	NO 1998-534	19980206
PRIORITY APPLN. INFO.:			SE 1995-2783	A 19950808
			SE 1995-3326	A 19950926
			WO 1996-SE976	W 19960726

L4 ANSWER 290 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The development of new energetic materials was presented for such materials as composite propellants contg. butacene, glycidyl azide polymer (GAP), CL-20, ammonium dinitramide (ADN), and NTO. The document is based on the Proceedings of the 27th International Annual ICT Conference.
 ACCESSION NUMBER: 1997:219416 CAPLUS
 DOCUMENT NUMBER: 126:265934
 TITLE: New developments of energetic materials outside China
 AUTHOR(S): Li, Shangwen; Zhao, Fengqi
 CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Binggong Xuebao, Huochuang Gong Fence (1997), 19(1), 63-64
 CODEN: BXHFFP; ISSN: 1004-9193
 PUBLISHER: Zhongguo Binggi Gongye Di-204 Yanjiusuo
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L4 ANSWER 291 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In this novel nitration method, dinitrogen pentoxide (N_2O_5) in an inert solvent is used as the nitrating agent, thereby removing the need for strong acids as the reaction medium. The N_2O_5 cleaves heteroatom-silicon bonds, in silylamines and silyl ethers resp., to yield the desired energetic groupings (nitramines or nitrate esters, resp.) without liberation of acids which would occur with conventional substrates (amines or alcs.). These nitrodesilylation reactions proceed cleanly and in good yield, and the scope of the reaction is illustrated by 29 examples, some of which produce high energy compds., notably plasticizers and an energetic polymer precursor. These reactions are therefore potentially clean nitrations for the manuf. of energetic compds.
 ACCESSION NUMBER: 1997:216243 CAPLUS
 DOCUMENT NUMBER: 126:292895
 TITLE: Nitration by oxides of nitrogen. 10. Clean nitrations:
 pentoxide
 (N₂O₅)
 AUTHOR(S): Millar, Ross W.; Philbin, Simon P.
 CORPORATE SOURCE: Defence Research Agency, Port Halstead, Sevenoaks, Kent, TN14 7BP, UK
 SOURCE: Tetrahedron (1997), 53(12), 4371-4386
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 126:292895

L4 ANSWER 292 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The mechanism of thermal decompn. of ammonium dinitramide (ADN), a new Cl-free energetic oxidizer of solid rocket propellant, was investigated by TG, DTA, and MS (mass spectroscopy). The DTA/TG data exhibited an activation energy 110 kJ/mol in the initial stage and 150 in the terminal stage. Based on the MS data, ADN evolved NO₂, NH₂OH, NH, NH₂, NH₃, and NH₄ after fusion at 92.degree.. These products were assumed to be oxiden./redn. products of radicals in a condensed phase.

ACCESSION NUMBER: 1997:203238 CAPLUS
 DOCUMENT NUMBER: 126:332217
 TITLE: Thermal decomposition characteristics of ammonium dinitramide. I
 AUTHOR(S): Takishita, Yukio; Teramoto, Yasuhiro
 CORPORATE SOURCE: TRDI, Japan Def. Agency, Tachikawa, 190, Japan
 SOURCE: Kayaku Gakkaishi (1997), 58(1), 23-20
 CODEN: KAGREA; ISSN: 1340-2781
 PUBLISHER: Kayaku Gakkai
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

L4 ANSWER 293 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The process comprises (1) reacting urea with dil. HNO₃ to obtain urea nitrate, (2) reacting the urea nitrate with H₂SO₄ to obtain nitrourea, (3) reacting the nitrourea with a nitrating agent, e.g., nitronium tetrafluoroborate, and adding NH₃ to the reaction mixt., (4) filtering the byproduct crystal, and concg. the filtrate, (5) adding Et nitrate to the concd. filtrate and filtering to remove the ppt., and (6) concg. the filtrate and adding chloroform to ppt. ADN. The ADN is used as an oxidizing agent for solid propellants.

ACCESSION NUMBER: 1997:145017 CAPLUS
 DOCUMENT NUMBER: 126:159395
 TITLE: Manufacture of ammonium dinitramide (ADN) useful as oxidizing agent
 INVENTOR(S): Suzuki, Shigeru; Myazaki, Shigefumi; Hatano, Hideo; Shiino, Kazuo; Onda, Toshio
 PATENT ASSIGNEE(S): Nissan Motor, Japan; Hosoya Fireworks
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKOKAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08325005	A2	19961210	JP 1995-152218	19950526
US 5659080	A	19970819	US 1996-652833	19960528

PRIORITY APPLN. INFO.: JP 1995-152218 19950526

L4 ANSWER 294 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A new application of ESR spin trapping is described using the nitromethane aci anion (CH₂:NO₂⁻) spin trapping technique for quant. measurement of nitrogen dioxide radicals (.bul.NO₂) and nitrite ions (NO₂⁻) in strong alk. aq. soln. The relative concn. of a spin adduct radical, dinitromethyl dianion radical [-O₂N-CH:NO₂.bul.-] (I), produced by UV photolysis, is shown to be proportional to the concn. of NO₂- dissolved in alk. soln. This method is applied to est. the .bul.NO₂ concns. produced by decompn. of two energetic nitramine compds.: cyclotrimethylenetrinitramine, C₆H₁₂N₆O₆ (RDX), and ammonium dinitramide, NH₄+NO₂)₂⁻ (ADN), by using calibration plots of the spin concn. of I vs. time of photolysis. Calibrations were prep'd. using sodium nitrite (NaNO₂) or ammonium nitrate (NH₄NO₃) which behave similarly to the energetic compds. with respect to formation of I.

ACCESSION NUMBER: 1997:140756 CAPLUS
 DOCUMENT NUMBER: 126:133212
 TITLE: Quantitative EPR Spin Trapping. 1. Nitrogen Dioxide Radicals and Nitrite Ions from Energetic Materials in Alkaline Aqueous Solution
 AUTHOR(S): Pace, M. D.; Carmichael, A. J.
 CORPORATE SOURCE: Naval Research Laboratory, Washington, DC, 20375-5342,
 USA
 SOURCE: Journal of Physical Chemistry A (1997), 101(10), 1848-1853
 CODEN: JPCAFH; ISSN: 1089-5639
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 295 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The 4 types of mixts. consisting of the 2 bases (aq. solns. of ammonium nitrate and ammonium dinitramide) and the 2 addns. (hollow glass microballoons and gunpowder) were considered. Based on thermodyn. computations of an ideal detonation and accompanying process (shock and rarefaction waves) there were obtained not only the dependences of detonation parameters on addn. quantities to mixts., but the pressure vs. particle velocity diagrams, which, in comparison with Hugoniots relatively soft (water) and hard (aluminum) substances, could be used to det. values of pressure in the shock waves being produced in surroundings nearby the end-wall and lateral surface of a charge. The brisant effect of an explosive was characterized by a value of relative brisance which was calcd. as percentage ratio of pressures of shock waves generated in surroundings under the same conditions by detonation products of the given explosive and the std. one. The brisant effect of the new emulsion explosives was comparable and could even exceed that of TNT of maximal d. The brisant ability of industrial emulsion explosives could be increased by .gtoreq.60% by replacing ammonium nitrate with ammonium dinitramide and hollow glass microballoons with powders obtained from military conversion and utilization of spent munitions.

ACCESSION NUMBER: 1997:76674 CAPLUS
 DOCUMENT NUMBER: 126:188072
 TITLE: Comparative brisant characteristics of some classes of industrial emulsion explosives
 AUTHOR(S): Odintsov, Victor V.; Pepekin, Vitaly I.
 CORPORATE SOURCE: Inst. Chem. Phys., Russian Academy Science, Moscow, 117977, Russia
 SOURCE: Propellants, Explosives, Pyrotechnics (1996), 21(6), 295-302
 CODEN: PEPYD5; ISSN: 0721-3115
 PUBLISHER: VCH
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 296 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 3 tables, 4 figures, and 4 refs., on ADN (ammonium dinitramide), a new promising candidate oxidizer for the next generation low-signature propellants. ADN may either fully or partially replace ammonium perchlorate as an oxidizer in propellant formulations without greatly sacrificing propellant performance, even at reduced metal loadings. More importantly, the quantity of HCl in the exhaust gas can be eliminated or substantially reduced.
 ACCESSION NUMBER: 1997:59341 CAPLUS
 DOCUMENT NUMBER: 126:106103
 TITLE: ADN, a new candidate oxidizer for the next generation propellants
 AUTHOR(S): Zhang, Haiyan; Chen, Hong; Wang, Guoqiang
 CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], Beijing, Oct. 7-10, 1996 (1996), 127-132. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Beijing Institute of Technology Press: Beijing, Peop. Rep. China.
 DOCUMENT TYPE: Conference; General Review
 LANGUAGE: English

L4 ANSWER 297 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 4 refs., on the synthesis of dinitroamide salts and their properties and applications. Synthetic methods discussed include: (1) reaction of β -substituted-N-alkyl-N,N-dinitroamides with metal hydroxides, (2) cation exchange of dinitroamide salts, (3) reaction of ADN (ammonium dinitramide) with aq. strong base, (4) reaction of $XN(NO_2)_2$ with NH₃, (5) reaction of urethanes with org. anhydrides, HNO₃, and base to yield N-(alkoxycarbonyl)-N-nitroamide salts, followed by reaction with a nitronium compd., (6) reacting nitramides with a nitrating agent to yield dinitramides, (7) reaction of an aliph. isocyanate with NO₂BF₄ and HNO₃ to form N,N-dinitramines, which are further reacted with a base or a salt to form dinitramides, (8) reaction of ammonium carbamate with a nitrating agent, (9) reaction of NH₃ with nitronium compds., and (10) reaction of 2-(trimethylsilylethyl)-N,N-dinitramines with CsF to form Cs dinitramide. Among the above 10 methods, methods 5, 6, and 10 have high yields; the other methods have lower (<30%) yields. In addn. to being used as potential oxidizers in rocket propellants, dinitroamide salts also have application as reagents for specialized org. synthesis.
 ACCESSION NUMBER: 1997:59337 CAPLUS
 DOCUMENT NUMBER: 126:106102
 TITLE: Synthesis of novel oxidizer dinitroamide salts
 AUTHOR(S): Wang, Guoqiang; Chen, Hong; Zhang, Haiyan; Ma, Yuanying
 CORPORATE SOURCE: Xi'an Modern Chemistry Res. Inst., Xi'an, 710065, Peop. Rep. China
 SOURCE: Theory and Practice of Energetic Materials, [Proceedings of the International Autumn Seminar on Propellants, Explosives and Pyrotechnics], Beijing, Oct. 7-10, 1996 (1996), 85-91. Editor(s): Feng, Changgen; Ou, Yuxiang; Zeng, Qingxuan. Beijing Institute of Technology Press: Beijing, Peop. Rep. China.
 DOCUMENT TYPE: Conference; General Review
 LANGUAGE: English

L4 ANSWER 298 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB High-solid pressable explosive compns. comprise 1-9 wt.% liq. energetic polymer and 91-99 wt.% high-performance solid explosive oxidizer. The energetic polymer has a wt. av. mol. wt. >10,000 dwt., using a polystyrene std., and the preferred energetic polymer is chain-extended (polyglycidyl nitrate). The pressable explosives produce extremely high-detonation pressure, high-detonation velocity, and excellent metal accelerating capability.
 ACCESSION NUMBER: 1997:27082 CAPLUS
 DOCUMENT NUMBER: 126:91603
 TITLE: High-performance pressable explosive compositions
 INVENTOR(S): Braithwaite, Paul C.; Lund, Gary K.; Wardle, Robert B.
 PATENT ASSIGNEE(S): Thiokol Corporation, USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5587553	A	19961224	US 1994-335097	19941107
GB 2307906	A1	19970611	GB 1995-24749	19951204
GB 2307906	B2	20000223		
DE 19549157	A1	19970703	DE 1995-19549157	19951228
PRIORITY APPN. INFO.:			US 1994-335097	19941107

L4 ANSWER 299 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A systematic measurement of dielec. relaxation at frequency 10-400 mHz was carried out on natural rubber and chloroprene rubber contg. small amt. of nitroaniline. Three absorption regions were obstd. in the dielec. loss ("e") with frequency plots. The first absorption region in the lower-frequency range was attributed to the Maxwell-Wagner effect. The second absorption region was attributed to aniline additives, remained nearly the same for natural rubber and decreased in intensity as the amt. of aniline increased, in chloroprene rubber. The third region is assocd. with Debye losses and is also nearly the same for natural rubber samples, while it decreases on addn. of aniline derivs. to chloroprene rubber; this decrease is attributed to peptizing effects of aniline derivs. An aged chloroprene rubber gum was treated with nitroanilines and the mech. and elec. properties improved and approached those of fresh rubber.
 ACCESSION NUMBER: 1996:608767 CAPLUS
 DOCUMENT NUMBER: 125:250138
 TITLE: Dielectric relaxation and mechanical properties of natural and chloroprene rubber with nitroaniline and peroxide additives
 AUTHOR(S): Abd-El-Messieh, S. L.; Younan, A. F.
 CORPORATE SOURCE: Microwave Phys. Dep., National Res. Center, Cairo, Egypt
 SOURCE: Journal of Applied Polymer Science (1996), 62(5), 805-812
 CODEN: JAPNAB; ISSN: 0021-8995
 PUBLISHER: Wiley
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 300 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ammonium dinitramide [NH4N(NO₂)₂; ADN], useful for an excellent oxidizer for high performance solid propellants, was obtained by a new synthetic method which employed urea as a starting substance and acquired nitrourea as an intermediate product in yield, apprx. 15% (based on the amt. of nitrourea). The phys. properties of ADN were detd. The hygroscopicity of ADN was slightly higher than that of ammonium nitrate. So, it was recommended to handle ADN at 50% of relative humidity or below. Moreover, ignition temp., drop hammer test, friction test, and electrostatic spark test were carried out on 4 types of ADN crystals. As the result, it was found out that a powd. and a prismatic types of ADN were more insensitive than that of a coagulated and a needle types.

ACCESSION NUMBER: 1996:560008 CAPLUS
 DOCUMENT NUMBER: 125:225920
 TITLE: New synthetic method and properties of ammonium dinitramide
 AUTHOR(S): Hatano, Hideo; Onda, Toshio; Shino, Kazuo; Miyazaki, Shigefumi; Matsuzawa, Shin
 CORPORATE SOURCE: Technol. Dev. Cent., Hosoya Kako Co. Ltd., Akiruno, 197, Japan
 SOURCE: Kayaku Gakkaishi (1996), 57(4), 160-165
 CODEN: KAGAEA; ISSN: 1340-2781
 PUBLISHER: Kayaku Gakkaishi
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

L4 ANSWER 301 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The utility of mercury(II) dinitramide, Hg(N₃O₄)₂, in addn. to C:C bonds, mercuration, alkylation, and complexation is reported. E.g., reaction of Hg(N₃O₄)₂ with ethylene in H₂O gave 51% O(CH₂CH₂HgN₃O₄)₂; alkylation of Hg(N₃O₄)₂ with RI (R = Me, Et, Pr, Bu, Me₂CH) gave 22-42% yields of mixts. of RN(NO₂)₂ and RON(O):NO₂.
 ACCESSION NUMBER: 1996:554631 CAPLUS
 DOCUMENT NUMBER: 125:168227
 TITLE: Dinitramide and its salts. Part 9. Mercury(II) dinitramide, new reagent in the chemistry of organomercury compounds
 AUTHOR(S): Luk'yanov, O. A.; Anikin, O. V.; Tartakovskii, V. A.
 CORPORATE SOURCE: Institut Organicheskoi Khimii im. N. D. Zelinskogo, Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (2), 451-458
 CODEN: IAKSEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian
 OTHER SOURCE(S): CASREACT 125:168227

L4 ANSWER 302 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The thermal behavior and energetic properties of ammonium dinitramide, ADN, are described. Thermal decompn. reactions and proposed mechanistic decompn. pathways are presented.

ACCESSION NUMBER: 1996:514618 CAPLUS
 DOCUMENT NUMBER: 125:172484
 TITLE: Thermal behavior of ammonium dinitramide
 AUTHOR(S): Loebbecke, S.; Krause, H.; Pfeil, A.
 CORPORATE SOURCE: Fraunhofer Inst. Chemische Technologie ICT, Pfingstal, D-76318, Germany
 SOURCE: International Annual Conference of ICT (1996), 27th(Energetic Materials), 143.1-143.4
 CODEN: IACIEQ
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 303 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A review, with 7 refs., of the development and testing of novel energetic compds., for incorporation into formulations for high-performance rocket and gun propellants, high explosives, and pyrotechnics. The research was carried out by SNPE (France). Examples of promising compds. are CL-20, glycidyl azide polymer (with hydroxylated analogs), azide-terminated glycidyl azide polymer, butacene combustion catalyst, ammonium dinitramide, and NTO.
 ACCESSION NUMBER: 1996:514509 CAPLUS
 DOCUMENT NUMBER: 125:199998
 TITLE: New molecules for high energetic materials
 AUTHOR(S): Finck, Bernard; Graindorge, Herve
 CORPORATE SOURCE: Cent. Rech. Bouchet, SNPE/DPP, Vert le Petit, 91710, Fr.
 SOURCE: International Annual Conference of ICT (1996), 27th(Energetic Materials), 23.1-23.13
 CODEN: IACIEQ
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: English

L4 ANSWER 304 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The elec. spark sensitivity test, drop ball test, friction test, and DSC test have been done for energetic materials, including primary and secondary high explosives, and mixts. of fuel and oxidizer. The correlations between the results of these tests were examd., and it was found that there are rough correlations between them for explosive compds.
 but not for fuel-oxidizer mixts. It is our conclusion that we should confirm the high sensitivity of a material by conducting all tests.

ACCESSION NUMBER: 1996:508330 CAPLUS
 DOCUMENT NUMBER: 125:146431
 TITLE: Correlations between screening test results of energetic materials
 AUTHOR(S): Hasagawa, Takayuki; Kawashima, Eiichi; Sato, Kazuya; Yoshida, Tadao
 CORPORATE SOURCE: College of Engineering, Hosei University, Koganei, 184, Japan
 SOURCE: Proceedings of the International Pyrotechnics Seminar (1996), 22nd, 195-207
 CODEN: PPYSD7; ISSN: 0270-1898
 PUBLISHER: IIT Research Institute
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 305 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 1996:486443 CAPLUS
 DOCUMENT NUMBER: 125:146443
 TITLE: The charge density and electrostatic potential of three dinitramide salts (explosives, propellants)
 AUTHOR(S): Martin, Anthony
 CORPORATE SOURCE: Univ. of Toledo, Toledo, OH, USA
 SOURCE: (1996) 176 pp. Avail.: Univ. Microfilms Int., Order No. DA9621853
 DOCUMENT TYPE: From: Diss. Abstr. Int., B 1996, 57(3), 1822
 LANGUAGE: Dissertation
 English

L4 ANSWER 306 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The Department of Defense is currently considering replacing ammonium perchlorate with ammonium dinitramide (ADN). The ADN, a class 1.1 explosive oxidizer, will be used in solid rocket propellant mixts. and explosives. This study was intended to evaluate the potential of ADN to produce alterations in paternal fertility, maternal pregnancy and lactation, and growth and development of offspring. Male and female rats received drinking water treated with 2000, 1000, or 200 mg ADN/L throughout the study. Mating occurred following 14 days of treatment. All dams, one-half the males, and representative pups were maintained for a total of 90 days of treatment. No mortality occurred in parental animals during the study. Treatment of ADN resulted in no adverse effects on mating as 92-100% of the animals mated. No treatment-related effects were seen in parental animals clin. or histopathol. Adverse treatment-related effects were noted in maternal and paternal fertility indexes, gestational indexes, and live birth indexes in both the high- and mid-dose groups. Litter sizes in the high- and mid-dose groups were significantly smaller than those of the low-dose and control groups. Mean pup wts. showed no significant differences between ADN-treated pups and controls. Gross and histopathol. examm. of the animals failed to identify the cause for the decrease in litter prodn. in the high- and mid-dose dams. This study indicates that ADN is a reproductive toxicant. The no-observable-effect level is 289 mg/kg/day, the median dose of the low-level female rats.
 ACCESSION NUMBER: 1996:456353 CAPLUS
 DOCUMENT NUMBER: 125:107376
 TITLE: Reproductive toxicity screen of ammonium dinitramide administered in the drinking water of Sprague-Dawley rats
 AUTHOR(S): Kinkead, E. R.; Wolfe, R. E.; Flemming, C. D.; Leahy, H. F.; Caldwell, D. J.
 CORPORATE SOURCE: ManTech Environ. Technol., Inc., Dayton, OH, USA
 SOURCE: Report (1995), AL/OET-TR-1994-0162; Order No. AD-A303786, 39 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1996, 96(15), Abstr. No. 15-01,118
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 307 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Nitration of nitramide to dinitramide with NO₂BF₄ (I), NO₂SO₃F (II), NO₂SO₃H, and (NO₂)₂SO₃I is described. The best yields (up to 100%) were obtained when I and II were used with MeCN as solvent.
 ACCESSION NUMBER: 1996:455715 CAPLUS
 DOCUMENT NUMBER: 125:264344
 TITLE: Dinitramide and its salts. 11. Synthesis of dinitramide by nitration of nitramide with nitryl salts
 AUTHOR(S): Luk'yanyov, O. A.; Shvedova, S. N.; Shepelev, E. V.; Varfolomeeva, O. N.; Malikina, N. N.; Tartakovskii, V. A.
 CORPORATE SOURCE: Zelinskii, N.D., Institut Organicheskoi Khimii, Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (6), 1569-1570
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 308 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The IR and Raman spectra of the NH₄⁺, K⁺, and Cs⁺ salts of N(NO₂)₂- in the solid state and in soln. were measured and are assigned with the help of ab initio calcns. at the HF/6-31G* and MP2/6-31+G* levels of theory. In agreement with the variations obstd. in the crystal structures, the vibrational spectra of N(NO₂)₂- are strongly influenced by the counterions and the phys. state. Whereas the ab initio calcns. for free N(NO₂)₂- indicate a min. energy structure of C₂ symmetry, Raman polarization measurements on solns. of N(NO₂)₂- suggest point group C₁ (i.e., no symmetry). This is attributed to the small (<3 kcal/mol) N-NO₂ rotational barrier in N(NO₂)₂- which allows for easy deformation.
 ACCESSION NUMBER: 1996:449488 CAPLUS
 DOCUMENT NUMBER: 125:126293
 TITLE: The Dinitramide Anion, N(NO₂)₂-
 AUTHOR(S): Christe, Karl O.; Wilson, William W.; Petrie, Mark A.; Michels, Harvey H.; Bottaro, Jeffrey C.; Gilardi, Richard
 CORPORATE SOURCE: Propulsion Directorate, Phillips Laboratory, Edwards Air Force Base, CA, 93524, USA
 SOURCE: Inorganic Chemistry (1996), 35(17), 5068-5071 CODEN: INOCRAJ; ISSN: 0020-1669
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 309 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 1996:429212 CAPLUS
 DOCUMENT NUMBER: 125:90637
 TITLE: The role of surface layer processes in solid propellant combustion
 AUTHOR(S): Chakravarthy, Satyanarayanan R.
 CORPORATE SOURCE: Georgia Institute of Technology, Atlanta, GA, USA
 SOURCE: (1995) 248 pp. Avail.: Univ. Microfilms Int., Order No. DA9614089
 DOCUMENT TYPE: From: Diss. Abstr. Int., B 1996, 57(1), 480 Dissertation
 LANGUAGE: English

L4 ANSWER 310 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Kinetics of K dinitramide decompr. was studied in melts and solns. at 130 - 200. degree.. The reaction rate const. was k = 10[15.1.+-0.3] exp(39.500.+-600)/RT c-l. The reaction mechanism was suggested.
 ACCESSION NUMBER: 1996:410127 CAPLUS
 DOCUMENT NUMBER: 125:178642
 TITLE: Thermal decomposition of the potassium salt of dinitramide in the liquid state
 AUTHOR(S): Dubovitskii, F. I.; Volkov, G. A.; Grebennikov, V. N.; Manelis, G. B.; Nazin, G. M.
 CORPORATE SOURCE: Institut Khimicheskoi Fiziki, Chernogolovka, Russia
 SOURCE: Doklady Akademii Nauk (1996), 347(6), 763-765 CODEN: DAKNEQ; ISSN: 0869-5652
 PUBLISHER: MAIK Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 311 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetics of thermal decompr. of KN(NO₂)₂ was studied depending on the humidity of samples (which was varied by recrystrn. from different solvents) and temp. Obstd. differences from thermal decompr. the molten salt are discussed.
 ACCESSION NUMBER: 1996:396861 CAPLUS
 DOCUMENT NUMBER: 125:258075
 TITLE: Thermal decomposition of dinitramide potassium salt in the solid state
 AUTHOR(S): Dubovitskii, F. I.; Volkov, G. A.; Grebennikov, V. N.; Manelis, G. B.; Nazin, G. M.
 CORPORATE SOURCE: Institut Khimicheskoi Fiziki, Chernogolovka, Russia
 SOURCE: Doklady Akademii Nauk (1996), 348(2), 205-206 CODEN: DAKNEQ; ISSN: 0869-5652
 PUBLISHER: MAIK Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 312 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB N,N-dinitro derivs. of urethanes, benzamide, and p-toluenesulfonamide were synthesized. Their reaction with NH₃ afforded ammonium dinitramide in 44-85 % yield.
 ACCESSION NUMBER: 1996:396575 CAPLUS
 DOCUMENT NUMBER: 125:172552
 TITLE: Dinitramide and its salts. Part 10. Preparation of dinitramide salts from organic acid N,N-dinitramides
 AUTHOR(S): Luk'yanyov, O. A.; Kozlova, I. K.; Shitov, O. P.; Konnova, Yu. V.; Kalinina, I. V.; Tartakovskii, V. A.
 CORPORATE SOURCE: Zelinskii, N.D. Institut Organicheskoi Khimii, Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (4), 908-912
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 313 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A 90-day general toxicity/reproductive screen performed on ammonium dinitramide (ADN) at doses of 162, 103, 29, and 0.0 mg ADN/kg/day resulted in a treatment-related adverse effect on litter prodrn. Incidences of animals producing litters (1/11, 3/12, 12/12, and 11/12, resp.) and mean nos. of pups per litter (7, 7, 16, and 15, resp.) both were statistically significantly less than controls. In a follow-up study, mated dams treated with ADN at the same doses and examd. at gestation days (GDs) 10 and 20 showed an effect in fetus loss similar to that seen in the reproductive screen. A pre- vs. postimplantation dosing regimen indicated that implantation is vulnerable to ADN effects during the preimplantation period (GDs 1-3). No implantation sites were found in the rats treated with 2000 mg ADN/L drinking water (target dose of 160 mg ADN/kg/day) during GDs 1-3. Nos. of implantation sites found in the rats treated during GDs 4-8 were similar to those found in the control group. The pituitary was not identified specifically in this study as the site of primary action, but serum progesterone was reduced by 27%, which may have resulted in reduced fertility.

ACCESSION NUMBER: 1996:374781 CAPLUS
 DOCUMENT NUMBER: 125:51075
 TITLE: Dose- (and time-) dependent blockade of pregnancy in Sprague-Dawley rats administered ammonium dinitramide in drinking water
 AUTHOR(S): Klinke, Edwin R.; Wotile, Robin E.; Feldmann, Marcia L.
 CORPORATE SOURCE: ManTech Environmental Technology, Inc., Dayton, OH, 45457-0009, USA
 SOURCE: Toxicology and Industrial Health (1996), 12(1), 59-67
 CODEN: TIEHCJ ISSN: 0748-2337
 PUBLISHER: Princeton Scientific
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 314 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Mercury(II) dinitramide, Hg(N₃O)₂, (I) was prepnd. Its electronic and vibrational spectra show that I in a cryst. phase and in solns. in nonpolar solvents is a covalent compd., mercury atom being bond with oxygen atom. In polar solvents I dissociates to form mercury(II) cation and dinitramide anion N₃O₄.
 ACCESSION NUMBER: 1996:369314 CAPLUS
 DOCUMENT NUMBER: 125:103355
 TITLE: Dinitramide and its salts. Part 8. Synthesis, spectra, and the structure of mercury(II) dinitramide
 AUTHOR(S): Shlyapochnikov, V. A.; Cherskaya, N. O.; Luk'yanyov, O.
 CORPORATE SOURCE: Zelinskii, N. D. Institut Organicheskoi Khimii, Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1996), (2), 447-450
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 315 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The novel synthesis of nitramines and nitramides by nitrolysis of the corresponding N-(trialkylsilyl) compds. using dinitrogen pentoxide (N₂O₅) is described. In 17 examples the yields were generally in the range 70 to over 90%, falling below the lower figure only if alkylsilyl groups with chain lengths >2 were employed. The reactions were characterized by their cleanliness, and the co-products, trialkylsilyl nitrates, were relatively stable and volatile, facilitating isolation of the nitrated products. Furthermore, these trialkylsilyl nitrates, unlike the acyl nitrates produced in conventional nitrolyses, were isolable and could be used to nitrate further substrates, thus eliminating problems of disposal of spent liquors from conventional reactions. The process was both mild and versatile, enabling nitramine functions to be introduced into a variety of mol. environments, and two notable cases were exemplified, namely, N-nitroaziridines and N,N'-dinitroaminals.
 ACCESSION NUMBER: 1996:289532 CAPLUS
 DOCUMENT NUMBER: 125:57513
 TITLE: A new route to nitramines in nonacidic media
 AUTHOR(S): Millar, R. W.
 CORPORATE SOURCE: Defence Res. Agency, Kent, TN14 7BP, UK
 SOURCE: ACS Symposium Series (1996), 623(Nitration), 122-133
 CODEN: ACSMCB; ISSN: 0097-6156
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 125:57513

lh TDS

L4 ANSWER 316 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Neat samples of energetic materials and propellant formulations were exmd. by near-IR Fourier-transform Raman spectroscopy at 100-3000 cm⁻¹ spectral range (Raman shift). An intense peak in the spectrum of HMX was obstd. at a Raman shift of .apprx.150 cm⁻¹, with an intensity close to that of the ring-stretching features of HMX at 800-1000 cm⁻¹. The technique has application in anal. and characterization of propellant formulations, esp. for potential forensic applications.

ACCESSION NUMBER: 1996:285145 CAPLUS
DOCUMENT NUMBER: 124:320903
TITLE: Fourier transform Raman spectroscopy of some energetic materials and propellant formulations
AUTHOR(S): Fell, N. F.; Widder, J. M.; Medlin, S. V.; Peace-Rodriguez, R. A.; McNeby, K. L.
CORPORATE SOURCE: U.S. Army Research Laboratory, AMSRL-WT-PC, Aberdeen Proving Ground, MD, 21005, USA
SOURCE: Proceedings of the Beijing International Symposium on Pyrotechnics and Explosives, 3rd, Beijing, Nov. 6-9, 1995 (1995), 124-134. Editor(s): Yuxiang, Ou. China Ordnance Society: Beijing, Peop. Rep. China.
DOCUMENT TYPE: CODEN: 62RIAT Conference English
LANGUAGE:

L4 ANSWER 317 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB A review, with 9 refs., of advances in development of explosives and solid propellants since the end of the Cold War, focusing on the development of new energetic compds. and oxidizers [esp. TNAZ (1,3,3-trinitroazetidine), HNNW (hexanitrohexahexaazaisowurtzitane), and ADN (ammonium dinitramide), and boron-contg. propellants]. Factors driving the research included higher power (specific impulse), safer and more economical manufg. methods, cheaper prodn. costs, and environmental aspects (e.g., replacements for NH4ClO4 oxidizer in rocket propulsion).

ACCESSION NUMBER: 1996:215910 CAPLUS
DOCUMENT NUMBER: 124:264988
TITLE: Recent advances in explosives and solid propellants
AUTHOR(S): Bottaro, Jeffrey C.
CORPORATE SOURCE: Organic, Processing, Environmental Chemistry Dep., SRI
SOURCE: International, Menlo Park, CA, 94025, USA
Chemistry & Industry (London) (1996), (7), 249-52
PUBLISHER: Society of Chemical Industry
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

L4 ANSWER 318 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The methods of probing mass spectrometry (PMS) for obtaining flame diagnostics and for the study of kinetics and mechanism of the thermal decompn. products of energetic materials were described. Several types of instruments based on microprobe and mol. beam mass spectrometric sampling were developed. Time-of-flight mass spectrometry was also used. App. for high (10 atm.) and low (<1 atm) pressure were developed for the study of "in-situ" combustion and decompr. of energetic materials. Several examples were presented to demonstrate application of the PMS method for flame structure studies, thermal decompn., and dynamics of ignition. Exptl. data on decompr. of double-base propellants, ammonium dinitramide, and ammonium perchlorate were presented.

ACCESSION NUMBER: 1996:176836 CAPLUS
DOCUMENT NUMBER: 124:206473
TITLE: Combustion chemistry of energetic materials studied by probing mass spectrometry
AUTHOR(S): Korobinechov, O. P.; Kulibida, L. V.; Paletsky, A. A.; Shmakov, A. G.
CORPORATE SOURCE: Institute of Chemical Kinetics and Combustion, Siberian Branch Russian Academy of Sciences, Novosibirsk, 630090, Russia
SOURCE: Materials Research Society Symposium Proceedings (1996), 418(Decomposition, Combustion, and Detonation Chemistry of Energetic Materials), 245-55
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 319 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB High-resoln. ($\sin\theta/\lambda$, $< 1.34 \text{ \AA}^{-1}$), low-temp. (85 K) x-ray diffraction data were used to map the deformation d. and the derived electrostatic potentials for three dinitramide salts. The traditional presentation of contour maps was replaced with 3-dimensional views of the mol. A comparison of the dinitramide ions from each salt was presented.

ACCESSION NUMBER: 1996:176810 CAPLUS
DOCUMENT NUMBER: 124:236464
TITLE: Charge densities and electrostatic potentials for energetic materials
AUTHOR(S): Pinkerton, A. A.; Martin, A.
CORPORATE SOURCE: Department of Chemistry, University of Toledo, Toledo,
OH, 43606, USA
SOURCE: Materials Research Society Symposium Proceedings (1996), 418(Decomposition, Combustion, and Detonation Chemistry of Energetic Materials), 49-54
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 320 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ab initio geometries and vibrational spectra were calcd. for the amine structures of dinitramine HN(NO₂)₂ and methyldinitramine CH₃N(NO₂)₂ at the RHF and MP2 levels using the std. 6-31G* and 6-31G** basis sets. The mol. have different symmetries in their equil. states, the Cs and Cl resp. By scaling the ab initio RHF/6-31G* force fields with the previously obtained set of transferable factors, the available exptl. vibrational bands were assigned to the fundamental modes and frequencies were predicted for the normal vibrations of the unmeasured spectral regions. Some common patterns of the geometrical parameters, vibrational spectra, and force fields of the simplest nitramines are discussed.

ACCESSION NUMBER: 1996:164983 CAPLUS
 DOCUMENT NUMBER: 124:245230
 TITLE: Ab initio calculations of the structures and the harmonic force fields of the amine forms of dinitramine and methyldinitramine. Vibrational spectra and their interpretation using a scaling procedure
 AUTHOR(S): Khaikin, L. S.; Grikina, O. E.; Shlyapochnikov, V. A.; Bock, Ch. W.
 CORPORATE SOURCE: Dep. Chem., M. V. Lomonosov Moscow State Univ., Moscow, 119899, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (11), 2135-47
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 321 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Fourier transform Raman spectroscopy employing near-IR laser radiation at a wavelength of 1.064 .mu.m (9394.5 cm⁻¹) as the scattering source was used to characterize neat energetic materials and several propellant formulations. Raman spectra are reported over the region from 75 to 3000 cm⁻¹, relative to the laser line. The technique was extended to the study of cryst. components of propellant formulations during heating. The utility of the technique in detg. the principal cryst. ingredient in a propellant formulation is demonstrated.

ACCESSION NUMBER: 1996:134014 CAPLUS
 DOCUMENT NUMBER: 124:188250
 TITLE: Fourier transform Raman spectroscopy of some energetic materials and propellant formulations. II
 AUTHOR(S): Feil, N. F.; Widder, J. M.; Medlin, S. V.; Morris, J. B.; Pesce-Rodriguez, R. A.; McNeaby, K. L.
 CORPORATE SOURCE: US Army Res. Lab., Aberdeen Proving Ground, Aberdeen, MD, 21005-5066, USA
 SOURCE: Journal of Raman Spectroscopy (1996), 27(2), 97-104
 PUBLISHER: Wiley
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 322 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The Department of Defense is currently considering replacing ammonium perchlorate with ammonium dinitramide (ADN), a class 1.1 explosive oxidizer, to be used in solid rocket propellant mixts. and explosives. This study was intended to evaluate the potential of ADN to produce alterations in paternal fertility, maternal pregnancy and lactation, and growth and development of offspring. Male and female rats received drinking water contg. 0.0, 0.2, 1.0, or 2.0 g ADN/L throughout the study. Mating occurred following 14 days of treatment. All dams, one-half the males, and representative pups were maintained for 90 days of treatment. No mortality occurred in parental animals during the study. Treatment with ADN resulted in no adverse effects on mating; 92-100% of the animals mated. No treatment-related effects were seen in parental animals clin. or histopathol. Adverse treatment-related effects were noted in maternal and paternal fertility indexes, gestational indexes, and live birth indexes in both the mid- and high-dose groups. Litter sizes in the mid- and high-dose groups were significantly smaller than those of the low-dose and control groups. Mean pup wts. showed no significant differences between ADN-treated pups and controls. Gross and histopathol. examn. of the animals failed to identify the cause for their decrease in litter prodn. in the mid- and high-dose dams. This study indicates that ADN is a reproductive toxicant. The no-observable-effect level (NOEL) is 29 mg/kg/day, the median dose of the low-level female rats.

ACCESSION NUMBER: 1996:125343 CAPLUS
 DOCUMENT NUMBER: 124:167864
 TITLE: Reproductive toxicity screen of ammonium dinitramide administered in the drinking water of Sprague-Dawley rats
 AUTHOR(S): Kinkead, Edwin R.; Wolfe, Robin E.; Flemming, Carlyle D.; Leahy, Harold F.; Caldwell, Daniel J.; Miller, Clay R.; Marit, Gary B.
 CORPORATE SOURCE: ManTech Environmental Technology, Inc., Dayton, OH, 45437-0009, USA
 SOURCE: Toxicology and Industrial Health (1995), 11(4), 437-48
 PUBLISHER: TIHEEC; ISSN: 0748-2337
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 323 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The dinitramide ion (N3O₄⁻) is a relatively new simple N oxide species with previously unknown coordination chem. Here the authors report the 1st metal complex of N3O₄⁻, fac-Re(bpy)(CO)3N3O₄. The x-ray crystal structure of fac-Re(bpy)(CO)3N3O₄ clearly shows that coordination occurs at the central N of the dinitramide skeleton with the rest of the complex possessing the typical facial geometry exhibited by Re(bpy)(CO)3X complexes. The Re-N3O₄ bond length is 2.223(10) .ANG.. Fac-Re(bpy)(CO)3N3O₄ is extremely photosensitive in soln. and photodecomposes to fac-Re(bpy)(CO)3NO₃ and N2O with a quantum yield (.phi.1.43) of 0.67 .+-. 0.05.

ACCESSION NUMBER: 1996:121465 CAPLUS
 DOCUMENT NUMBER: 124:192393
 TITLE: Coordination Chemistry and Photoreactivity of the Dinitramide Ion
 AUTHOR(S): Trammell, Scott; Goodson, Patricia A.; Sullivan, B. Patrick
 CORPORATE SOURCE: Department of Chemistry, University of Wyoming, Laramie, WY, 82071-3838, USA
 SOURCE: Inorganic Chemistry (1996), 35(6), 1421-2
 PUBLISHER: INOCAW; ISSN: 0022-1669
 DOCUMENT TYPE: American Chemical Society Journal
 LANGUAGE: English

L4 ANSWER 324 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The pressure- and temp.-reaction phase diagram for ammonium dinitramide (ADN) was detd. using a high-temp.-high-pressure diamond anvil cell with optical polarizing light microscopy, Fourier-transform IR spectroscopy, laser-Raman spectroscopy, and energy-dispersive x-ray diffraction. The phase diagram was detd. at between ambient pressure and 10.0 GPa and from -75 degree. to the decompr. temp., or 120 degree.. The diagram delineates the melting curve for alpha.-ADN, a reversible phase transition in alpha.-ADN forming a new high-pressure monoclinic polymorph, beta.-ADN, and also identifies the pressure and temp. conditions at which a solid phase rearrangement occurs to form ammonium nitrate (AN) and N₂O. Energy-dispersive x-ray diffraction and Raman spectra were obtained for both .alpha.- and .beta.-ADN as a function of pressure at room temp.
 ACCESSION NUMBER: 1996:81527 CAPLUS
 DOCUMENT NUMBER: 124:121368
 TITLE: Pressure, Temperature Reaction Phase Diagram for Ammonium Dinitramide
 AUTHOR(S): Russell, T. P.; Piermarini, G. J.; Block, S.; Miller, P.
 CORPORATE SOURCE: Chemistry Division, Naval Research Laboratory, Washington, DC, 20375-5320, USA
 SOURCE: Journal of Physical Chemistry (1996), 100(8), 3248-51 CODEN: JPCHAQ; ISSN: 0022-3654
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 325 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method was developed to analyze ammonium dinitramide (ADN), a new energetic material, as well as anionic impurities, by capillary ion electrophoresis with UV detection. Anal. of ADN samples could be done in under 5.5 min employing this method. Anal. of pure samples as well as aged samples was accomplished.
 ACCESSION NUMBER: 1996:75433 CAPLUS
 DOCUMENT NUMBER: 124:121366
 TITLE: Analysis of anionic impurities in ammonium dinitramide
 AUTHOR(S): Oehrle, Stuart A.
 CORPORATE SOURCE: Waters Corporation, Milford, MA, 01757, USA
 SOURCE: Journal of Energetic Materials (1996), 14(1), 37-45 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 (ADN). Part II. Capillary ion electrophoresis

L4 ANSWER 326 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A method was developed to analyze ammonium dinitramide (ADN), a new energetic materials, as well as anionic impurities, using ion chromatog. with UV detection. Anal. of ADN samples could be carried out in <20 min. Anal. of pure samples as well as aged samples was accomplished.
 ACCESSION NUMBER: 1996:75432 CAPLUS
 DOCUMENT NUMBER: 124:121365
 TITLE: Analysis of anionic impurities in ammonium dinitramide
 AUTHOR(S): Oehrle, Stuart A.
 CORPORATE SOURCE: Waters Corporation, Milford, MA, 01757, USA
 SOURCE: Journal of Energetic Materials (1996), 14(1), 27-36 CODEN: JOEMDK; ISSN: 0737-0652
 PUBLISHER: Dowden, Brodman & Devine, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 (ADN). Part I. Ion chromatographic analysis

L4 ANSWER 327 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The mixts. that consist of aq. soln. of ammonium nitrate and ammonium dinitramide with hollow glass microspheres and propellant additives are studied. The dependence of parameters of detonation on the amt. of additives in the mixt. and diagrams of pressure vs. particles velocity are detd. on the basis of the thermodyn. calcn. of ideal detonation and assocd. processes (shock wave and rarefaction wave). The characteristics of high explosive action is calcd. as the percentage ratio of pressure of the shock wave formed in the surrounding medium with similar conditions during action of detonation products explosive being investigated and std. explosive. The brisance of new emulsion explosives is comparable with or higher than that of the max. d. trotyl. The brisance of com. emulsion explosives is increased by 60% during replacement of ammonium nitrate by ammonium dinitramide and hollow glass microspheres by propellant.
 ACCESSION NUMBER: 1996:26761 CAPLUS
 DOCUMENT NUMBER: 124:91826
 TITLE: Comparative characteristics of some classes of commercial emulsion explosives. I. High explosive action
 AUTHOR(S): Odintsov, V. V.; Pepekin, V. I.
 CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Moscow, Russia
 SOURCE: Khimicheskaya Fizika (1995), 14(7), 132-44 CODEN: KHFID9; ISSN: 0207-401X
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 328 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Castable high explosive compns. comprise a binder system contg. plasticol grade nitrocellulose (PNC) and an energetic plasticizer. The explosive compn. also includes a solid high explosive ingredient such as an explosive nitramine. Reactive metals such as Al, Mg, or Ti, and oxidizers such as ammonium perchlorate, ammonium nitrate, or ammonium dinitramide, are optionally included in the explosive compns. of the present invention.
 The disclosed explosive compns. have a typical detonation velocities >8000 m/s.

ACCESSION NUMBER: 1995:1002983 CAPLUS
 DOCUMENT NUMBER: 124:91931
 TITLE: Castable explosive composition having nitrocellulose binder
 INVENTOR(S): Wallace, II Ingvar A.; Braithwaite, Paul C.; Neidert, Jamie B.
 PATENT ASSIGNEE(S): Thiokol Corporation, USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5468313	A	19951121	US 1994-346587	19941129
PRIORITY APPLN. INFO.: US 1994-346587 19941129				

L4 ANSWER 329 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The explosive compns. include a sep. acceptor phase and a sep. explosive phase, and the acceptor phase contains a halogenated polymer and a reactive metal which are capable of reacting at high temp. and pressure while the explosive phase includes a non-metalized explosive. A portion of the explosive phase surrounds the acceptor phase, and detonation of the explosive phase exposes the acceptor phase to high temps. and pressures which permit the metal and halogenated polymer to efficiently react and produce even greater temps. and pressures. The explosives produce a detonation pressure in >200 kilobars at the Chapman-Jouget (C-J) condition.

ACCESSION NUMBER: 1995:1002965 CAPLUS
 DOCUMENT NUMBER: 124:60767
 TITLE: Explosives having enhanced air blast and extended reaction times
 INVENTOR(S): Lund, Gary K.; Braithwaite, Paul C.
 PATENT ASSIGNEE(S): Thiokol Corporation, USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5467714	A	19951121	US 1993-168714	19931216
PRIORITY APPLN. INFO.: US 1993-168714 19931216				

L4 ANSWER 330 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Crystallog. data, at. coordinates and mol. structures were detd. of the potassium, ammonium and hydrazine salts of dinitramide $M-N(NO_2)_2$, where $M = K, NH_4, N_2H_5$ by x-ray diffraction anal. The anion charge of the cation salts is delocalized over the two nitro-groups but in the K-salts it is localized on one of these. The pKa of dinitramide was detd. to be -5.62 in HCl by spectrophotometric method. The dinitramide is one of the strongest mineral acids.

ACCESSION NUMBER: 1995:953935 CAPLUS
 DOCUMENT NUMBER: 124:102383
 TITLE: Crystal and molecular structure and acid-base properties of dinitramide salts
 AUTHOR(S): Gidaspov, B. V.; Tselinskii, I. V.; Mel'nikov, V. V.; Margolis, N. V.; Grigor'eva, N. V.
 CORPORATE SOURCE: St. Petersburg Gos. Tekhnol. Inst., Russia
 SOURCE: Zhurnal Obshchey Khimii (1995), 65(6), 995-1002
 CODEN: ZOKHA4; ISSN: 0044-460X
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 331 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The vibrational and electronic spectra of dinitramide salts $MN(NO_2)_2$ ($M = K, Na, Li, NH_4, Fe, Ag, Mn, Mg, Rb, C(NH_2)_3$) were studied. The exptl. data on IR and Raman spectra of solns. and melts of the salts were satisfactorily interpreted from the anion model with the C_{2v} symmetry. The complication of the spectra in the cryst. phase was explained by restructuring of the anion, which reduces its symmetry and makes the nitro groups nonequiv.

ACCESSION NUMBER: 1995:908284 CAPLUS
 DOCUMENT NUMBER: 123:324729
 TITLE: Dinitramide and its salts. 7. Spectra and structure of dinitramide salts
 AUTHOR(S): Shlyapochnikov, V. A.; Oleneva, G. I.; Cherskaya, N. O.; Luk'yanyov, O. A.; Gorelik, V. P.; Anikin, O. V.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Russian Acad. Sci., Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (8), 1508-12
 CODEN: IASKEA
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 332 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The IR and Raman spectra of N,N-dinitromethylamine were studied and the normal coordinate anal. were performed. The frequency assignments were done. The methyldinitramine mol. is assumed to belong to Cs symmetry group.
 ACCESSION NUMBER: 1995:908283 CAPLUS
 DOCUMENT NUMBER: 124:70057
 TITLE: Vibrational spectra and structure of N,N-dinitromethylamine
 AUTHOR(S): Avakyan, V. G.; Shlyapochnikov, V. A.; Federov, B. S.; Margolin, L. N.; Volkova, V. V.
 CORPORATE SOURCE: A. V. Topchiev Inst. Petrochem. Synthesis, Russian Acad. Sci., Moscow, 117912, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (8), 1503-7
 CODEN: IASKEA
 PUBLISHER: Nauka
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 333 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The development of chlorine- and fluorine-free solid propellants and the new type of oxidizers with superior properties were discussed with respect to air pollutant emissions known to form from combustion of ammonium perchlorate- and HMX-contg. solid propellants. Ammonium nitrate, hydrazine mononitrate, ammonium dinitramide, and hydrazine nitroform were proposed as suitable oxidizers to substitute for ammonium perchlorate and HOK. The thermodyn. calcn. for some model formulations were made and compared with those of conventional propellants.
 ACCESSION NUMBER: 1995:907352 CAPLUS
 DOCUMENT NUMBER: 124:33076
 TITLE: Possible ways to develop solid propellants for ecological safety
 AUTHOR(S): Manelis, G. B.
 CORPORATE SOURCE: Inst. Chem. Phys. Chernogolovka, Russia
 SOURCE: Hanneng Cailliao (1995), 3(2), 9-19
 CODEN: HNCAPQ; ISSN: 1006-9941
 PUBLISHER: Hanneng Cailliao Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 334 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Secondary arom. nitramines absorb in IR at 1517-1536, 1285-1299 and 755-759 cm⁻¹ irresp. of the nature of an arom. ring. Comparison of the 1H and 13C NMR spectra of ring substituted N-methyl-N-phenylnitramines indicate that interaction between the substituents is poorly transmitted across the ring. .alpha.-Cleavage obstd. in the mass spectra of nitramines shows that the Ar-N bond is abnormally weak. Dipole moments of N-methyl-N-phenylnitramines find a simple explanation assuming that the unshared electron pair is shifted towards the arom. ring only in the presence of electron demanding substituents in conjugated position. The results are incompatible with the solvent-caged-pair theory of the nitramine rearrangement.
 ACCESSION NUMBER: 1995:903903 CAPLUS
 DOCUMENT NUMBER: 124:158990
 TITLE: Spectral and electrooptical properties of ring substituted N-methyl-N-phenylnitramines
 AUTHOR(S): Daszkiewicz, Z.; Nowakowska, E.; Prezdo, W. W.; Kyziol, J. B.
 CORPORATE SOURCE: Inst. Chem., Univ. Opole, Oleska, 45-052, Pol.
 SOURCE: Polish Journal of Chemistry (1995), 69(10), 1437-46
 CODEN: PJCHDQ; ISSN: 0137-5083
 PUBLISHER: Polish Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 335 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetics of thermal decomp. of ammonium dinitramide, NH₄N(NO₂)₂ (I), was studied manometrically, adjusted by spectrophotometric anal. of the N3O₄⁻. The initial decomp. of I proceeds via monomol. cleavage of the N-N bond in the anion; in the melt, the salt dissociates to NH₄⁺, in which acids play a definite part. The stability of I in the molten state is not high; it is possible to handle I under isothermal conditions at up to 100.degree. for 1 h. The solid-state stability of I is high enough to conduct technol. processes at 60-70.degree.; long-term storage is possible at 20-25.degree.. Dried samples of I with water content <0.2% showed abnormal (i.e., non-Arrhenius) decomp. kinetics. At 60.degree., the solid-phase decomp. proceeds faster than in the melt at 100.degree.. To avoid non-Arrhenius decomp., it is necessary to control the moisture content of I.
 ACCESSION NUMBER: 1995:866192 CAPLUS
 DOCUMENT NUMBER: 123:261203
 TITLE: Thermal decomposition of dinitramide ammonium salt
 AUTHOR(S): Manelis, G. B.
 CORPORATE SOURCE: Institute Chemical Physics RAS, Chernogolovka, Russia
 SOURCE: International Annual Conference of ICT (1995), 26th(Pycrotechnics), 15/1-15/17
 CODEN: IACIEQ
 PUBLISHER: Fraunhofer-Institut fuer Chemische Technologie
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 336 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The characteristics of new formulations of composite and low-signature propellants were discussed with respect to reduced sensitivity, in order to meet official French suggestions (Instruction No. 2060 DGA IPE). Butacene, a prepolymer with grafted combustion catalyst species, reduces the sensitivity and reactivity of high-burning rate composite propellants when submitted to thermal hazards (or threats) without any loss of energetic performance in the operational temp. range. For min.-smoke propellants, the use of energetic binders places limitations on both the amt. of explosive fillers (nitramine) and the sensitivity of the energetic plasticizers to avoid the bore effect (with delayed shock-to-detonation transition phenomena) and losses in performance may have to be allowed. Other results obtained on extruded double-base propellants (SD 1175 and SD 1178) and gas-generator propellants showed that it may be possible to design a motor that meets all the MIL-STD 2105 IM requirements. Some progress can be expected to be made in the near future using new energetic mols. [e.g., hexanitrohexaazaisowurtzitane (CL-20)], polyazidoglycidyl ethers, and hydrazinium nitroformate (mainly in min. smoke propellant) to produce both high-performance and high-insensitivity levels.

ACCESSION NUMBER: 1995:830800 CAPLUS
 DOCUMENT NUMBER: 123:291161
 TITLE: Energetic insensitive propellants for solid and ducted rockets
 AUTHOR(S): Doriath, Gerard
 CORPORATE SOURCE: SNPE, CRB, Vert-le-Petit, 91710, Fr.
 SOURCE: Journal of Propulsion and Power (1995), 11(4), 870-82
 PUBLISHER: American Institute of Aeronautics and Astronautics
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 337 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB To investigate the extent to which individual bond angles around a tetrahedrally bonded carbon atom deviate from the regular tetrahedral angle of 109.47.degree., and the sum of the six angles from the max. value of 656.83.degree., we have used results derived from neutron diffraction studies on mol. contg. the X-CH₂-Y grouping, and corresponding results for CH₃-X, X-CH₂-Y and H-CX₂ structures calcd. using ab initio MO methods. In both sets of data the individual values vary between 105.degree. and 117.degree.. Yet, provided there is no steric constraint such as the bonding of the carbon in a four- or three-membered ring, the summation of the angles is less than the max. by only a few tenths of a degree. An inherent tendency for the summation to attain this max. value is further substantiated by the data for CCC and COC rings. Even though the CCC and COC ring angles are about 60.degree., compensatory increases in the remaining five angles are sufficiently large to reduce the deficit in the summation to approx. 14.degree.. The distortion of the tetrahedra is discussed in terms of the interplay between bond angle relationships and the bond lengths. In the CH₃-X structures in which C-X is a trigonal axis of symmetry, the tetrahedra are elongated along this axis. In other CH₂-X structures, where two of the hydrogen atoms, H_a and H_c, are located sym. about the plane contg. C, X, and the other hydrogen atom, H_b, the tetrahedra are also elongated but tilted a little toward, or away from, the H_b-H_c side of the H_aH_bH_c triangle at the base of the tetrahedron.

ACCESSION NUMBER: 1995:815061 CAPLUS
 DOCUMENT NUMBER: 124:29045
 TITLE: Bond angles around tetrahedrally bonded carbon, and distortion of the tetrahedron in CH₃-X structures
 AUTHOR(S): George, Philip; Glusker, Jenny P.; Bock, Charles W.
 CORPORATE SOURCE: The Institute for Cancer Research, The Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA,
 SOURCE: 19111, USA
 PUBLISHER: THEOCHEM (1995), 338, 155-73
 DOCUMENT TYPE: Elsevier
 LANGUAGE: English

L4 ANSWER 338 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The optimized geometry of 1, C₂H₅-O-C(double bonds oxygen)N(NO₂)₂, a precursor to ammonium dinitramide, has been computed at the ab initio HF/6-31G* level. We find no structural evidence that 1 exists in the ionic form, C₂H₅-O-C(triple bonds)O + N(NO₂)₂(-). The reaction of 1 with NH₃ passes through a transition state that is consistent with a concerted substitution (Ingold mechanism) in which N(NO₂)₂(-) is the leaving group.

ACCESSION NUMBER: 1995:811228 CAPLUS
 DOCUMENT NUMBER: 124:29007
 TITLE: Computational analysis of some aspects of a synthetic route to ammonium dinitramide
 AUTHOR(S): Brinck, T.; Politzer, P.
 CORPORATE SOURCE: Dep. Chem., New Orleans Univ., LA, USA
 SOURCE: Report (1993), Order No. AD-A274648, 6 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1994, 94(9), Abstr. No. 424,879
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 339 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB BMP2/6-3 1 G* geometry optimizations combined with non-local d. functional energy calcns. were used to det. the structure of dinitraminic acid, HN(NO₂)₂, and the energetics of several processes that may be involved in its decompr. These include bond cleavage and also fragmentation induced by protonation.

ACCESSION NUMBER: 1995:808696 CAPLUS
 DOCUMENT NUMBER: 123:266584
 TITLE: Computational study of the structure of dinitraminic acid, HN(NO₂)₂, and the energetics of some possible decomposition steps
 AUTHOR(S): Politzer, P.; Seminaro, J. M.
 CORPORATE SOURCE: Dept. of Chemistry, New Orleans Univ., LA, CA, USA
 SOURCE: 545, 11 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1994, 94(8), Abstr. No. 421,633
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 340 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The synthesis and properties of dinitramide (N_3O_4^-) salts with NH_3 , hydrazine, hydroxylamine, formamidine, their alkylated and aminated derivs., etc. are described.
 ACCESSION NUMBER: 1995:657358 CAPLUS
 DOCUMENT NUMBER: 123:101310
 TITLE: Dinitramide and its salts. 6. Dinitramide salts with substituted ammonium bases
 AUTHOR(S): Luk'yanyov, O. A.; Agevinin, A. R.; Leichenko, A. A.; Seregina, N. M.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1995), (1), 113-17
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 341 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A dinitramide salt or acid useful as a stable oxidizer for solid fuel rocket propellant or explosive formulations is prep'd. by reacting an N -(alkoxycarbonyl)- N -nitroamide reactant with a nitronium-contg. compd. and treating the reaction mixt. with a base to form the product. The N -(alkoxycarbonyl)- N -nitroamide may be formed by first mixing the corresponding alkylcarbamate with an anhydride of one or more Cl-20 org. acids, then adding nitric acid to the reaction mixt.

ACCESSION NUMBER: 1995:621846 CAPLUS
 DOCUMENT NUMBER: 123:36626
 TITLE: Process for forming dinitramide salt or acid for rocket propellants
 INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul
 E.; Bomberger, David C.
 PATENT ASSIGNEE(S): SRI International, USA
 SOURCE: U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 827, 247, abandoned.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5415852	A	19950516	US 1992-968928	19921030
WO 9316002	A1	19930819	WO 1993-US752	19930127
W: CA, JP, KR BW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE EP 624148 EP 624148 R: DE, FR, GB, IT, NL, SE				
AL 19941117 B1 19960424 T2 19950413			EP 1993-904688	19930127
JP 07503449			JP 1993-513559	19930127
PRIORITY APPLN. INFO.:			US 1992-827247	19920129
			US 1992-968928	19921030
			WO 1993-US752	19930127

L4 ANSWER 342 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The compd., 3,3-dinitroazetidine, is manufd. by reacting a mixt. of 1-tertiary-butyl-3,3-dinitroazetidine and benzyl chloroformate to form 1-(benzyl oxy carbonyl)-3,3-dinitroazetidine (I), reacting I and trifluoromethanesulfonic acid to form 3,3-dinitroazetidinium trifluoromethanesulfonate (II), and neutralizing II with a base. Salts of the 3,3-dinitroazetidine and prepn. of such salts are also disclosed.
 ACCESSION NUMBER: 1995:559898 CAPLUS
 DOCUMENT NUMBER: 122:294780
 TITLE: Synthesis of 3,3-dinitroazetidine for explosives
 INVENTOR(S): Hiskey, Michael A.
 PATENT ASSIGNEE(S): United States Dep't. of Energy, USA
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5395945	A	19950307	US 1993-37873	19930329
US 37873	A0	19951015		

PRIORITY APPLN. INFO.: US 1993-37873 19930329

L4 ANSWER 343 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The vibrational and electronic spectra of dinitramide and its salts $\text{M}(\text{NO}_2)_2$, ($\text{M} = \text{K}, \text{Na}, \text{Li}, \text{NH}_4, \text{Hg}, \text{Fe}$, etc.), were studied under different conditions (aggregate states, solvents, and temp.). The spectra were interpreted from exptl. and calcd. data using the normal coordinate anal. Conclusions about the structure of the HN_3O_4^- mol. and its ion are made.
 ACCESSION NUMBER: 1995:555030 CAPLUS
 DOCUMENT NUMBER: 122:325197
 TITLE: Molecular absorption spectra of dinitramide and its salts
 AUTHOR(S): Shlyapochnikov, V. A.; Oleneva, G. I.; Cherskaya, N. O.; Luk'yanyov, O. A.; Gorelik, V. P.; Anikin, O. V.; Tartakovskiy, V. A.
 CORPORATE SOURCE: Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, 117913 GSP, Leninsky 47, Moscow, Russia
 SOURCE: Journal of Molecular Structure (1995), 348, 103-6
 CODEN: JMOSB4; ISSN: 0022-2860
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 344 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The strategy of org. synthesis were developed for a new class of inorg. compds., i.e. dinitramide and its metal, NH₄⁺ and substituted NH₄⁺ salts. Its basic concepts were tested in model reactions of beta.-substituted derivs. of N-alkyl-N-nitrotoluenesulfonamides with bases and were confirmed by the decyanethylation reaction of N,N-dinitro-.beta.-aminopropionitrile taken as an example.
 ACCESSION NUMBER: 1995:542480 CAPLUS
 DOCUMENT NUMBER: 123:186721
 TITLE: Dinitramide and its salts. 1. Synthesis of dinitramide salts by decyanethylation reaction of N,N-dinitro-.beta.-aminopropionitrile
 AUTHOR(S): Luk'yanyov, O. A.; Gorlelik, V. P.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (1), 94-7
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 345 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The structures, energetics, and decompr. mechanisms of gaseous ammonium nitrite (NH4NO₂) and ammonium dinitramide [ADN, NH4(NO₂)₂] have been studied theor. by different ab initio MO approaches. In the gas phase, both species have the structures of mol. complexes, [NH3].cntdot.[HX]. The ionic geometries, [NH4⁺][X⁻], are not local min. on the potential energy surface and would not be stable after vaporization. For NH4NO₂, [NH3].cntdot.[trans-HONO] is the most stable isomer, and [NH3].cntdot.[cis-HONO] and [NH3].cntdot.[HN(O)NO₂] structures lie higher by 1.4 and 0.4 kcal/mol at the G1 level of theory. For the gaseous ADN, [NH3].cntdot.[HN(NO₂)₂] is the most stable structure, while the [NH3].cntdot.[HON(O)NO₂] isomer is 2.3 kcal/mol less favorable. The calcd. diisocn. energies for the [NH3].cntdot.[HX] complex to NH3 and HX are 8-9 and 12-14 kcal/mol for NH4NO₂ and HON(O)NO₂ are found to be 38-40 kcal/mol, while the barrier for HON(O)NO₂ diisocn. is about 42 kcal/mol. We predict the following values of the heats of formation, DELTA.Hf.degree.(O), in the gas phase: -35.5 kcal/mol for [NH3].cntdot.[trans-HONO] and 3.2 kcal/mol for [NH3].cntdot.[HN(NO₂)₂].

A realistic mechanism for the decompr. of ADN, which is fully consistent with the products measured by Brill et al. (ref. 3), has been proposed on the basis of these ab initio MO results.
 ACCESSION NUMBER: 1995:520931 CAPLUS
 DOCUMENT NUMBER: 122:248052
 TITLE: Theoretical Study of the Gas-Phase Structure, Thermochemistry, and Decomposition Mechanisms of NH4NO₂ and NH4(NO₂)₂
 AUTHOR(S): Mebel, M. M.; Lin, M. C.; Morokuma, K.; Melius, C. F.
 CORPORATE SOURCE: Emory L. Elseron Center for Scientific Computation, Emory University, Atlanta, GA, 30322, USA
 SOURCE: Journal of Physical Chemistry (1995), 99(18), 6842-8
 CODEN: JPCHAZ; ISSN: 0022-3654
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 346 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB IR and UV spectroscopic studies of dinitramide show that in covalent state it exists in two forms. In one of these forms, the proton is bound to the central nitrogen atom, HN(NO₂)₂. In the other form, the proton is equally bound to two oxygen atoms of both nitro groups.
 ACCESSION NUMBER: 1995:498077 CAPLUS
 DOCUMENT NUMBER: 122:274521
 TITLE: Dinitramide and its salts. 4. Molecular structure of dinitramide
 AUTHOR(S): Shlyapochnikov, V. A.; Cherskaya, N. O.; Luk'yanyov, O.
 CORPORATE SOURCE: A.; Gorlelik, V. P.; Tartakovskiy, V. A.
 N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (9), 1610-13
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 347 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Prepn. and physicochem. properties of salts of dinitramide HN(NO₂)₂ with mono- and bivalent metals of Group I, II, VII, and VIII are considered.
 ACCESSION NUMBER: 1995:498062 CAPLUS
 DOCUMENT NUMBER: 122:280545
 TITLE: Dinitramide and its salts. 3. Metallic salts of dinitramide
 AUTHOR(S): Luk'yanyov, O. A.; Anikin, O. V.; Gorlelik, V. P.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, 117913, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (9), 1546-9
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 348 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The dinitramide anion shows ambident properties, and its reactions with alkylating agents give N- or O-alkylated products or their mixts. Thus, treating AgNO₂ with RI (R = Me, allyl) in MeCN gave 50% RN(NO₂)₂ (I; R = Me) and 16% I (R = allyl), resp., as the only products, while EtI and Me₂CHI under these conditions gave mixts. of both the corresponding I and RON(O)NO₂ (II), and 1-bromoadamantane gave only the corresponding II. Reactions of alkylated products with bases were studied.
 DOCUMENT NUMBER: 1995:498037 CAPLUS
 ACCESSION NUMBER: 123:227595
 TITLE: Dinitramide and its salts. 5. Alkylation of dinitramide and its salts
 AUTHOR(S): Luk'yano, O. A.; Shlykova, N. I.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Inst. Org. Chem., Moscow, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (10), 1775-8
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian
 OTHER SOURCE(S): CASREACT 123:227595

L4 ANSWER 349 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Theor. ab initio MO methods were used to det. the gas-phase mol. structure (geometry optimization), heat of formation, and to exam. the decompn. mechanisms of NH₄NO₂ and NH₄(NO₂)₂ (I). The energies of dissociation of [NH₃]H(X) to NH₃ and HX were 8-9 kcal/mol for NH₄NO₂ and 12 kcal/mol for I; the energies of elimination of the first and second NO₂ groups from NH₄(NO₂)₂ were similar (38-39 kcal/mol). The heats of formation (ΔH₀) for the most stable isomers of NH₄NO₂ and gas-phase I were -35.5 kcal/mol (for trans-[NH₃]HONO) and +3.2 kcal/mol for [NH₃]H(NO₂)₂. A mechanism for gas-phase decompn. of I was given for the early stages.
 ACCESSION NUMBER: 1995:359930 CAPLUS
 DOCUMENT NUMBER: 122:137594
 TITLE: Theoretical study of the gas phase structure, thermochemistry and decomposition mechanisms of NH₄NO₂
 AUTHOR(S): Mebel, A. M.; Lin, M. C.; Morokuma, K.; Melius, C. F.
 CORPORATE SOURCE: Cherry L. Emerson Center Scientific Computation, Emory
 SOURCE: University, Atlanta, GA, 30322, USA
 DOCUMENT TYPE: Chemical and Physical Processes in Combustion (1994) 28:2-5
 PUBLISHER: Combustion Institute
 LANGUAGE: English
 CODEN: CPCPD9; ISSN: 0277-1128

L4 ANSWER 350 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Composite propellant formulations comprise a dinitramide salt oxidizer, such as NH₄dinitramide, an energetic binder, such as poly(glycidyl nitrate), a reactive metal, such as Al, and other typical propellant ingredients such as curatives and stabilizers. The disclosed propellant formulations are able to combust Al efficiently, possess high burn rates, and produce little or no HCl exhaust gases.
 ACCESSION NUMBER: 1995:314244 CAPLUS
 DOCUMENT NUMBER: 122:85017
 TITLE: Propellant formulations based on dinitramide salts and energetic binders
 INVENTOR(S): Hinshaw, Carol J.; Wardle, Robert B.; Highsmith, Tom K.
 PATENT ASSIGNEE(S): Thiokol Corp., USA
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9424073	A1	19941027	WO 1994-US4270	19940419
W: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KG, KP, KR, KZ, LK, LU, LV, MD, MG, MN, MM, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, UZ, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5498303	A	19960312	US 1993-52035	19930421
AU 9467702	A1	19941108	AU 1994-67702	19940419
EP 695283	A1	19960207	EP 1994-915823	19940419
R: FR, GB, SE				
JP 09501388	T2	19970210	JP 1994-523532	19940419
PRIORITY APPLN. INFO.:			US 1993-52035	19930421
			WO 1994-US4270	19940419

L4 ANSWER 351 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB HN(NO₂)₂ adds readily to CH₂:HCOR (I; R = H, Me, Ph) to give 53-85.5% RCOC(CH₂NO₂)₂ (II; same R), but did not react with CH₂CHCN or I (R = OMe). II (R = MeO) was prep'd. in 4 steps from MeO₂CCCH₂CH₂H₂.HCl. Treating II (R = H, Me, Ph, MeO) with bases gave dinitramide salts in 66-83% yield.
 ACCESSION NUMBER: 1995:302135 CAPLUS
 DOCUMENT NUMBER: 122:132517
 TITLE: Dinitramide and its salts. 2. Dinitramide in direct and reverse Michael-type reactions
 AUTHOR(S): Luk'yano, O. A.; Konnova, Yu. V.; Klimova, T. A.; Tartakovskiy, V. A.
 CORPORATE SOURCE: N. D. Zelinsky Inst. Organic Chemistry, Russian Academy Sciences, Russia
 SOURCE: Izvestiya Akademii Nauk, Seriya Khimicheskaya (1994), (7), 1264-6
 CODEN: IASKEA
 PUBLISHER: Institut Organicheskoi Khimii im. N. D. Zelinskogo Rossiiskoi Akademii Nauk
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian
 OTHER SOURCE(S): CASREACT 122:132517

L4 ANSWER 352 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The vapor species over ammonium dinitramide at 60-110.degree. have been
 examd. using IR matrix (argon) isolation spectroscopy. Some twenty-two
 absorption bands were identified in the matrix spectra that appeared to
 be
 assocd. with a single trapped species, most likely hydrogen dinitramide
 $\text{HN}(\text{NO}_2)_2$. UV irradn. of these absorption bands resulted in their
 disappearance, and the appearance of new absorption bands assignable to
 trans-HNO_2 , N_2O , NO , and $(\text{NO})_2$. A tentative assignment of the 22
 vibrational frequencies to $\text{HN}(\text{NO}_2)_2$ has been made assuming Cs symmetry
 (18 IR active frequencies) which is in reasonable agreement with a recent
 theor. calcn. of these vibration frequencies. No evidence was obtained
 in
 this study for the existence of structural isomers of hydrogen
 dinitramide, notably the aci-form $\text{N}(\text{NO}_2)(\text{HOH})$, which recent theor.
 calcns. of R. J. Schmitt and J. C. Bottaro (1989) suggest is only
 slightly
 less stable than the secondary amine structure.
 ACCESSION NUMBER: 1995:222010 CAPLUS
 DOCUMENT NUMBER: 122:34515
 TITLE: Vaporization of $\text{NH}_4\text{N}(\text{NO}_2)_2$ and tentative
 identification of $\text{HN}(\text{NO}_2)_2$ by IR matrix isolation
 spectroscopy
 AUTHOR(S): Nelson, A.; Tulis, A. J.; Heberlein, D. C.; Patel,
 D.
 L.
 CORPORATE SOURCE: IIT Research Institute, Chicago, IL, 60616-3799, USA
 SOURCE: Proceedings of the International Pyrotechnics Seminar
 (1994), 18TH, 531-44
 CODEN: PPYSD7; ISSN: 0270-1898
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 354 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Unavailable
 ACCESSION NUMBER: 1994:560334 CAPLUS
 DOCUMENT NUMBER: 121:160334
 TITLE: The physical and chemical processes governing CO₂
 laser-induced pyrolysis and combustion of the solid
 propellants RDX, ADN, XM39, and M43
 AUTHOR(S): Fetherolf, Barry Lynn
 CORPORATE SOURCE: Pennsylvania State Univ., PA, USA
 SOURCE: (1993) 238 pp. Avail.: Univ. Microfilms Int., Order
 No. DA9414276
 From: Diss. Abstr. Int. B 1994, 54(12, Pt. 1), 6417
 DOCUMENT TYPE: Dissertation
 LANGUAGE: English

L4 ANSWER 353 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Various methods of prepn. of dinitramide salts from compds. with general
 formula $\text{XCH}_2\text{CH}_2\text{N}(\text{NO}_2)_2$ (X = groups facilitating a proton split-off in the
 α , position) are presented, and different simple and complex
 dinitramide salts were synthesized. Structures and physicochem.
 properties of the obtained compds. were also detd.
 ACCESSION NUMBER: 1995:192659 CAPLUS
 DOCUMENT NUMBER: 122:59471
 TITLE: Synthesis of dinitramide salts
 AUTHOR(S): Tartakovskiy, Vladimir A.; Luk'yanov, Oleg A.
 CORPORATE SOURCE: N.D. Zelinsky Institute Organic Chemistry, Russian
 Academy Sciences, Moscow, 117913, Russia
 SOURCE: International Annual Conference of ICT (1994),
 25TH(ENERGETIC MATERIALS-ANALYSIS, CHARACTERIZATION
 AND TEST TECHNIQUES), 13/1-13/9
 CODEN: IACIEQ; ISSN: 0722-4087
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 355 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The need to pack more power with less wt. into less space in tomorrow's
 weapons drove this program for the synthesis of super energetic
 materials.
 The original impetus was a program based solely on the energetic
 properties of cubane. However, as a course of the studies here and in a
 parallel sponsored program (SRI project no. 6654, ONR contract no.
 N00014-88-C-0537), an alternative oxidizer to cubane based systems, the
 dinitramide salts are discovered and developed. The developments in the
 synthesis of new oxidizers based on cubane and dinitramide are reported.
 New methods are developed for the functionalization of the cubane nucleus
 and synthesized new energetic cubanes. Several new routes are developed
 for the synthesis of the dinitramino group, $(\text{N}(\text{NO}_2)_2)$. The work on the
 prepn. of the dinitramide group led to the synthesis of the dinitramide
 ion, and as a consequence ammonium dinitramide. This synthesis is used
 to
 prep. cubane ammonium dinitramide salts. Cubane-1,4bis-(ammonium
 dinitramide) and cubane 1,2,4,-tetrakis(ammonium dinitramide) and
 several
 other dinitramide salts are synthesized.
 ACCESSION NUMBER: 1994:512782 CAPLUS
 DOCUMENT NUMBER: 121:112782
 TITLE: Synthesis of cubane based energetic molecules
 AUTHOR(S): Schmitt, R. J.; Bottaro, J. C.; Penwell, P. E.
 CORPORATE SOURCE: SRI Int., Menlo Park, CA, USA
 SOURCE: Report (1993), Order No. AD-A263271, 139 pp. Avail.:
 NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1993, 93(15),
 Abstr. No. 345,979
 Report
 LANGUAGE: English

L4 ANSWER 356 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Nitrogen dioxide (NO₂.bul.), produced by photodecompr. (.lambda. > 200 nm) of polycryst. sodium nitrite (Na⁺NO₂⁻), polycryst. energetic oxidizers, ammonium nitrate (NH₄⁺NO₃⁻), and ammonium dinitramide [NH₄⁺N(NO₂)₂⁻], and the polycryst. cyclic nitramine cyclotrimethylenetrinitramine (RDX), was studied by ESR (ESR) spin trapping at room temp. (300 K) and by matrix isolation ESR spectroscopy at 77 K. In spin trapping expts., the aci anion of nitromethane (CH₂:NO₂⁻) was used to spin trap NO₂.bul. produced by photodecompr. of these energetic compds. in basic (pH > 13) aq. solns. at room temp. The resulting NO₂.bul. adduct radical is the dinitromethyl anion radical (-NO₂-CH:NO₂.bul.-) which gives a 10-line ESR spectrum.

For equimolar starting concns. of each compd., the ESR signal intensities of the DNM.bul. spectrum varied according to NaNO₂ > NH₄(NO₂)₂ > NH₄NO₃ > RDX. From kinetics of DNM.bul. formation, the suggested dominant mechanisms of NO₂.bul. formation are NO₂⁻ + OH.bul. .fwdrw. NO₂.bul. + OH⁻ for compds. NaNO₂ and RDX and NO₃⁻ .fwdrw. NO₂.bul. + O⁻ for NH₄NO₃ and NH₄(NO₂)₂. Two other cyclic nitramines, cyclotetramethyleneetrinitramine(HMX) and hexanitrohexaazaisowurtzitane (HNIW), were confined to give weak DNM.bul. adduct ESR signals. In matrix isolation ESR expts. at 77 K, the rate of formation of NO₂.bul. is zero-order for NaNO₂ and NH₄NO₃ but first-order for NH₄(NO₂)₂ under the photolysis conditions of this expt., suggesting that, in the solid phase, NO₂.bul. is formed by different mechanisms in the two ammonium salts.

ACCESSION NUMBER: 1994:469266 CAPLUS
DOCUMENT NUMBER: 121:69266
TITLE: Spin Trapping of Nitrogen Dioxide from Photolysis of Sodium Nitrite, Ammonium Nitrate, Ammonium Dinitramide, and Cyclic Nitramines
AUTHOR(S): Pace, M. D.
CORPORATE SOURCE: Code 6120, Naval Research Laboratory, Washington, DC, 20375-5342, USA
SOURCE: Journal of Physical Chemistry (1994), 98(25), 6251-7
CODEN: JPCHEX; ISSN: 0022-3654
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 358 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Pressure-temp.-reaction phase diagrams were presented for several nitramine compds., including hexanitrohexaazaisowurtzitane, RDX, ammonium dinitramide, and p-nitroaniline. A diamond anvil cell was used in conjunction with optical polarizing light microscopy, Fourier-transform IR spectroscopy, energy dispersive x-ray diffraction, and micro-FT-Raman spectroscopy to det. these diagrams. A description was given of the diamond anvil cell and the assoccd. techniques employed.

ACCESSION NUMBER: 1994:438722 CAPLUS
DOCUMENT NUMBER: 121:38722
TITLE: Pressure/temperature/reaction phase diagrams for several nitramine compounds
AUTHOR(S): Russell, T. P.; Miller, P. J.; Piermarini, G. J.; Block, S.
CORPORATE SOURCE: Nav. Surf. Warf. Cent., Silver Spring, MD, 20903-5000,
USA
SOURCE: Materials Research Society Symposium Proceedings (1993), 296(Structure and Properties of Energetic Materials), 199-213
CODEN: MRSPDH; ISSN: 0272-9172
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 357 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Ammonium dinitramide salt having the formula NH₄⁺N(NO₂)₂⁻ useful as a stable oxidizer for solid fuel rocket propellant or explosive is manufd. by reacting NH₃ and a nitronium-contg. compd. at from -20.degree.C to -120.degree.C. The nitronium-contg. compd. may be either a covalently bonded compd. contg. a NO₂⁻ group or a nitronium salt having the formula (NO₂⁻)_nX⁻, where X is the anion of the nitronium salt and n = 1-2. The product is useful as a oxidizer for propellants or explosives.

ACCESSION NUMBER: 1994:460802 CAPLUS
DOCUMENT NUMBER: 121:60802
TITLE: Manufacture of ammonium dinitramide salt for rock propellant
INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul
PATENT ASSIGNEE(S): E.; Bomberger, David C.
SOURCE: SRI International, USA
U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5316749	A	19940531	US 1991-737757	19910730
PRIORITY APPLN. INFO.:		US 1991-737757 19910730		

L4 ANSWER 359 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Six energetic salts of 3,3-dinitroazetidinium (DNAZ) were prep'd. and characterized: (1) nitrate, (2) 2,4-dinitroimidazolate, (3) 4,4',5,5'-tetranitro-2,2'-biimidazolate, (4) dinitramide, (5) 5-nitro-1,2,4-triazol-3-onate, and (6) 3,5-dinitro-1,2,4-triazolate. Results from initial characterization, small-scale sensitivity tests, heats of formation, d., and ¹³C-nmr spectra were reported. The DNAZ nitrate was easily dehydrated to 1,3,3-trinitroazetidine.

ACCESSION NUMBER: 1994:413215 CAPLUS
DOCUMENT NUMBER: 121:13215
TITLE: Synthesis and initial characterization of some energetic salts of 3,3-dinitroazetidine
AUTHOR(S): Hiskey, Michael A.; Stinecipher, Mary M.; Brown, James
CORPORATE SOURCE: Los Alamos Natl. Lab., Univ. California, Los Alamos, NM, 87545, USA
SOURCE: Journal of Energetic Materials (1993), 11(3), 157-65
CODEN: JOEMDK; ISSN: 0737-0652
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 360 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Free-radical thermal and photochem. decomp. products of ammonium dinitramide (ADN) were compared to those of cyclic nitramines (RDX, HMX, and HNIW) and to ammonium perchlorate (AP). Photochem. formation of NO₂ from UV photolysis of ADN at 77 K followed first-order kinetics, whereas, zero-order NO₂ formation was obstd. from the cyclic nitramines.
 Mechanisms were suggested for ADN decompn. A general trend of cyclic nitramines to thermally decomp. forming nitroxide radicals was supported by 15N-ring-labeled HNIW results. ADN thermally decompns. at 190.degree. to form free-radical reaction products in soin. with tetrahydrothiophene-1,1-dioxide.

ACCESSION NUMBER: 1994:413203 CAPLUS
 DOCUMENT NUMBER: 121:13203
 TITLE: Nitrogen radicals from thermal and photochemical decomposition of ammonium perchlorate, ammonium dinitramide, and cyclic nitramines
 AUTHOR(S): Pace, M. D.
 CORPORATE SOURCE: Materials Research Society Symposium Proceedings (1993), 296 (Structure and Properties of Energetic Materials), 53-60
 SOURCE: CODEN: MRSPDH; ISSN: 0272-9172
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 361 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB In the course of this study, the authors have accomplished the synthesis of a new, stable class of dinitramide salts that will have both fundamental scientific interest and practical applications. The authors have also developed a new type of condensation reaction for the synthesis of cage compds. and prep'd. new clathrates of CL-20 with significantly more energy than pure CL-20. The dinitramide salts are based on a newly discovered inorg. anion known as the dinitramide anion, N(NO₂)₂⁻. The dinitramide anion is a uniquely stable, high oxygen d. grouping that can be prep'd. in many different combinations, including the ammonium salts.

ACCESSION NUMBER: 1994:323292 CAPLUS
 DOCUMENT NUMBER: 120:323292
 TITLE: Development of new protecting/leaving groups and application to the synthesis of cage nitramines
 AUTHOR(S): Schmitt, R. J.; Bottaro, J. C.; Penwell, P. E.
 CORPORATE SOURCE: SRI Int., Menlo Park, CA, USA
 SOURCE: Report (1993), Order No. AD-A261496, 110 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1993, 93(14), Abstr. No. 340, 225
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 362 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB NH₄NO₃ is phase-stabilized against phase IV and phase III transitions and the undesired vol. changes assocd. with that phase change by adding an effective amt. of .gtoreq.1 metal dinitramide salt having the formula MX_n wherein M is a metal cation, X is a dinitramide anion, and n is 1, 2 or 3.
 The phase-stabilized ammonium nitrate is useful in energetic applications such as solid propellants and explosives.

ACCESSION NUMBER: 1994:274702 CAPLUS
 DOCUMENT NUMBER: 120:274702
 TITLE: Manufacture of phase-stabilized ammonium nitrate for explosives
 INVENTOR(S): Highsmith, Thomas K.; Hinshaw, Carol J.; Wardle, Robert B.
 PATENT ASSIGNEE(S): Thickeol Corp., USA
 SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5292387	A	19940308	US 1993-10391	19930128
WO 9417015	A1	19940804	WO 1993-US11408	19931130
W: CA				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 689527	A1	19960103	EP 1994-902368	19931130
EP 689527	B1	19970312		
R: DE, FR, GB, SE				
PRIORITY APPLN. INFO.:		US 1993-10391		19930128
		WO 1993-US11408		19931130

L4 ANSWER 363 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The authors have used a non-local d. functional procedure (DF/GGA/DZVPP) to compute the structure of the dinitramide anion N(NO₂)₂⁻ and the energetics of some possible decompn. steps. The structures are in good agreement with crystallog. results, and show the NO₂ groups to be rotated out of the N-N-N plane, with a considerable difference between the two N-N-O angles of each NO₂ group. Of three possible N-N bond breaking reactions, the authors find that the least energy is required to yield NNO₂ and NO₂ (49.8kcal/mol-1). The authors suggest that these products have the option of forming a loosely bound complex.

ACCESSION NUMBER: 1994:200571 CAPLUS
 DOCUMENT NUMBER: 120:200571
 TITLE: Density functional study of the structure and some decomposition reactions of the dinitramide anion N(NO₂)₂⁻
 AUTHOR(S): Politzer, Peter; Seminario, Jorge M.; Concha, Monica C.; Redfern, Paul C.
 CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
 SOURCE: THEOCHEM (1993), 106(1-3), 235-40
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 364 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB MP2/6-31G* geometric optimizations combined with non-local d. functional energy calcns. were used to det. the structure of dinitraminic acid, HN(NO₂)₂, and the energetics of several processes that may be involved in its decomn. Such processes include bond cleavage and protonation-induced fragmentation.
 ACCESSION NUMBER: 1994:80863 CAPLUS
 DOCUMENT NUMBER: 120:80863
 TITLE: Computational study of the structure of dinitraminic acid, HN(NO₂)₂, and the energetics of some possible decomposition steps
 AUTHOR(S): Politzer, Peter; Seminario, Jorge M.
 CORPORATE SOURCE: Department of Chemistry, University of New Orleans, New Orleans, LA, 70148, USA
 SOURCE: Chemical Physics Letters (1993), 216(3-6), 348-52
 CODEN: CHPBLC; ISSN: 0009-2614
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 365 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dinitramide salts having the formula M(N(NO₂)₂)_n where M is selected from a metal ion, H, and Ni-8-contg. cation, and n is the charge of M are manufd. by reacting an alkoxy carbonyl nitroamide with a nitronium-contg. compd. and treating the reaction mixt. with a base. The reaction mixt. forms, if treated with an alc., a dinitramic acid (HN(NO₂)₂). The products are stable oxidizers for use in solid rocket propellants or explosive formulations.
 ACCESSION NUMBER: 1994:11330 CAPLUS
 DOCUMENT NUMBER: 120:11330
 TITLE: Manufacture of dinitramide salt or acid as an oxidizer
 INVENTOR(S): Schmitt, Robert J.; Bottaro, Jeffrey C.; Penwell, Paul
 PATENT ASSIGNEE(S): E.; Bomberger, David C.
 SOURCE: SRI International, USA
 PCT Int. Appl., 38 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9316002	A1	19930819	WO 1993-US752	19930127
W: CA, JP, KR RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5415852	A	19950516	US 1992-968928	19921030
EP 624148	A1	19941117	EP 1993-904688	19930127
EP 624148	B1	19960424		
R: DE, FR, GB, IT, NL, SE				
JP 07503449	T2	19950413	JP 1993-513559	19930127
PRIORITY APPLN. INFO.:			US 1992-827247	19920129
			US 1992-968928	19921030
			WO 1993-US752	19930127

L4 ANSWER 366 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB This qual. study examines the response of NH₄N(NO₂)₂ (I) to thermal stress
 at low heating rates, by using residual gas mass spectrometry and FTIR spectroscopy of a thin cryogenic condensate film from pyrolysis on a KCl window. The results were compared under similar conditions with the behavior of NH₄NO₃ and NH₂NO₂ as ref. materials. NH₄NO₃ decomps. into HNO₃ and NH₃ at 182.degree. and is regenerated on the cold cryostat surface. HNO₃ undergoes presumably heterogeneous loss to a minor extent such that the condensed film of NH₄NO₃ contains occluded NH₃. Nitramide undergoes efficient heterogeneous decomn. to N₂O and H₂O even at ambient temp. so that pyrolysis expts. at higher temps. are not possible. However, the presence of nitramide can be monitored by mass spectrometry at its mol. ion (m/e 62). I pyrolysis is dominated by decomn. into NH₃ and HN(NO₂)₂ (II) in analogy with NH₄NO₃, with a max. rate of decomn. at 170-155.degree.. The two vapor phase components regenerate I on the cold cryostat surface in addn. to deposition of the pure acid II and H₂O. Condensed-phase II is stable for indefinite periods of time at ambient temp. and vacuum conditions, whereas fast heterogeneous decomn. of II at higher temp. leads to N₂O and HNO₃. The HNO₃ then undergoes fast (heterogeneous) decomn. in some expts. Gas-phase II also undergoes fast heterogeneous decomn. to NO and other products, probably on the internal surface (.apprx.60.degree.) of the vacuum chamber before mass spectrometric detection.
 ACCESSION NUMBER: 1993:520698 CAPLUS
 DOCUMENT NUMBER: 119:120698
 TITLE: The thermal decomposition of the new energetic material ammonium dinitramide (NH₄(NO₂)₂) in relation to nitramide (NH₂NO₂) and NH₄NO₃
 AUTHOR(S): Rossi, Michel J.; Bottaro, Jeffrey C.; McMillen, Donald F.
 CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
 SOURCE: International Journal of Chemical Kinetics (1993), 25(7), 549-70
 CODEN: IJCKBO; ISSN: 0538-8066
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 367 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A study of the thermal decomn. of ammonium dinitramide (ADN) was reported as an energetic material and for comparison, ammonium nitrate (AN) and nitramide (NH₂NO₂). Studies were also performed with RDX and with Ag(NO₂)₂CH₂CN, which was tested as a source of the suspected RDX intermediate CH₂:NO₂. The former portion of the work was included as an appendix. Low-pressure pyrolysis of ADN showed acid-base dissociation like AN, but it also resulted in some decomn. to N₂O, NO, and water. The onset of evolution of these species was at 90.degree.; as in the case of AN, an explosive event was noted at 174.degree., which was .apprx.80.degree. higher than the m.p. of ADN and 15.degree. higher than thermal decomn. in a differential scanning calorimeter.
 ACCESSION NUMBER: 1993:520688 CAPLUS
 DOCUMENT NUMBER: 119:120688
 TITLE: Low pressure thermal decomposition studies of selected nitramine and dinitramine energetic materials
 AUTHOR(S): Rossi, M. J.; McMillen, D. F.; Golden, D. M.
 CORPORATE SOURCE: SRI Int., Menlo Park, CA, USA
 SOURCE: Report (1992), SRI-MP-281; Order No. AD-A247972, 89 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1992, 92(13), Abstr. No. 235,955
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 368 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The recently synthesized NH₄N(NO₂)₂- (ADN) is an ionic compd. ADN was studied using high-energy Xe atoms to sputter ions directly from the surface of the neat cryst. solid. Tandem mass spectrometric techniques were used to study dissocn. pathways and products of the sputtered ions. Among the sputtered ionic products were NH₄⁺, NO⁺, NO₂⁻, NO₂⁻·bul., N³⁻ and an unexpected high abundance of NO₃⁻. Tandem mass spectra of N(NO₂)₂- reveal the uncommon situation where a product ion (NO₃⁻) is formed in high relative abundance from metastable parent ions but is formed in low relative abundance from collisionally activated parent ions. The NO₃⁻ is formed in the gas phase by a rate-detg. isomerization of the N(NO₂)₂- that proceeds through a 4-centered transition state. The formation of the strong gas-phase acid, dinitraminic acid (HN₃O⁺), the conjugate acid of N(NO₂)₂⁻, occurs by dissocn. of protonated ADN and by dissocn. of ADN aggregate ions [NH₄(N(NO₂)₂)_nNH₄⁺] (n = 1-30).
 ACCESSION NUMBER: 1993:439623 CAPLUS
 DOCUMENT NUMBER: 119:39623
 TITLE: Sputtered ammonium dinitramide: tandem mass spectrometry of a new ionic nitramine
 AUTHOR(S): Doyle, Robert J., Jr.
 CORPORATE SOURCE: Chem. Div., Nav. Res. Lab., Washington, DC, 20375-5000, USA
 SOURCE: Organic Mass Spectrometry (1993), 28(2), 83-91
 CODEN: ORMSBG; ISSN: 0030-493X
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 369 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ab initio calcns. of the structure and thermochem. of trinitramide, N(NO₂)₃, are reported. A vibrationally stable C₃ structure having 1,545 .AVG. N-N bond lengths is found at the MP2/6-31G* level of theory. The heat of formation of trinitramide is 59 kcal/mol. Thermal decompn. of trinitramide most likely occurs via N-N bond cleavage, which is estd. to require 26 kcal/mol.
 ACCESSION NUMBER: 1993:434680 CAPLUS
 DOCUMENT NUMBER: 119:34680
 TITLE: Structure and stability of trinitramide
 AUTHOR(S): Montgomery, J. A., Jr.; Michels, H. H.
 CORPORATE SOURCE: United Technol. Res. Cent., East Hartford, CT, 06108, USA
 SOURCE: Journal of Physical Chemistry (1993), 97(26), 6774-5
 DOCUMENT TYPE: CODEN: JPCHAX; ISSN: 0022-3654
 LANGUAGE: Journal English

L4 ANSWER 370 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Five stable conformations of hydrogen dinitramide were identified through ab initio electronic structure calcns. The most stable form has a secondary amine structure, HN(NO₂)₂, and a calcd. heat of formation (0 K) of 28.4 kcal/mol. Four stable inorg. acid structures are found to lie 7.9-9.7 kcal/mol higher in energy. The predicted enthalpy of deprotonation of N(NO₂) (NOOH) is $\Delta H_{\text{acid}}(298 \text{ K}) = 302.6 \pm 2$ kcal/mol, making this one of the strongest known gas-phase inorg. acids. Authors est. the electron affinity of the N(NO₂)₂ radical to be 5.0 ± 0.5 eV and the N-N bond dissocn. energy of HN(NO₂)₂ to be 48 ± 8 kcal/mol. It is shown that unimol. decompn. is the most likely low-energy decompn. mechanism for hydrogen dinitramide.
 ACCESSION NUMBER: 1993:434661 CAPLUS
 DOCUMENT NUMBER: 119:34661
 TITLE: On the structure and thermochemistry of hydrogen dinitramide
 AUTHOR(S): Michels, H. H.; Montgomery, J. A., Jr.
 CORPORATE SOURCE: United Technol. Res. Cent., East Hartford, CT, 06108, USA
 SOURCE: Journal of Physical Chemistry (1993), 97(25), 6602-6
 CODEN: JPCHAX; ISSN: 0022-3654
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 371 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ab initio SCF MO calcns. have been performed for a series of nitramine mols. Calcns. were conducted on trinitramine, methylidinitramine, methylchloronitramine and trimethylamine using Pople's 6-31G and 6-31G* basis sets. Gas phase geometries for these mols. were detd. by a min. energy criterion using gradient techniques. The results are in qual. agreement with the geometries derived from electron diffraction studies and microwave spectroscopy. The extra-long N-N bonds in methylidinitramine and methylchloronitramine were not computed accurately at the SCF level of theory and it was shown that these bonds become longer if electron correlation is included at the second-order Moeller-Plesset level. Computations were performed for the heat of formation for trinitramine using Pople's isodesmic reaction concept and compared with a value obtained using an additivity rule.
 ACCESSION NUMBER: 1993:220173 CAPLUS
 DOCUMENT NUMBER: 119:220173
 TITLE: An ab initio study of some nitramine molecules
 AUTHOR(S): Zirl, David M.; Vladimiroff, Theodore
 CORPORATE SOURCE: US Army Armament, Res. Dev. Eng. Cent., Picatinny Arsenal, NJ, 07806, USA
 SOURCE: THEOCHEM (1993), 98, 291-7
 CODEN: THEODJ; ISSN: 0166-1280
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 372 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Optimized HF/3-21G* geometries were computed for s-tetrazine (I), benzene, and the title derivs. These structures were used to calc. the electrostatic potentials and av. local ionization energies of these mols. HF/3-21G* and MP2/6-31G* geometries were also computed for pentazine, which is as yet unknown, and shown to correspond to energy min. The electrostatic potential on the surface of I is strongly neg. above the electron-attracting ring nitrogen atoms and pos. above the ring and the hydrogen atoms, fully consistent with the structures of complexes that I is known to form with other mols. Previously developed relations were used to test the Hammett constants, σ_{m} and σ_{p} , of the N(NO₂)₂ group and the pKa values of I, its dinitroamino and chloro derivs., and pentazine. N(NO₂)₂ is strongly electron-withdrawing through induction and more weakly donating through resonance. In the I derivs., the electron-attracting power of the ring nitrogens significantly increases the extents of conjugation of the N(NO₂)₂ and Cl substituents, both resonance donors. However, the dominant effect of these substituents upon the ring is inductive deactivation toward electrophiles.

ACCESSION NUMBER: 1993:123811 CAPLUS
 DOCUMENT NUMBER: 118:123811
 TITLE: Computational analysis of the dinitroamino and chloro derivatives of benzene and s-tetrazine
 AUTHOR(S): Politzer, Peter; Murray, Jane S.; Seminario, Jorge M.
 CORPORATE SOURCE: Miller, Richard S.
 SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
 USA
 CODEN: THEOCHEM (1992), 94, 155-70
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 374 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An ab initio SCF MO approach was used to compute the 3-21G//STO-3G* and STO-5G//STO-3G* electrostatic potentials and av. local ionization energies of 17 para-substituted anilines. The most neg. potentials (V_{min}) and the local surface ionization energy min. (I_{min}) assoc'd. with the amine nitrogen lone pairs are highly sensitive indicators of the electron-donating and electron-attracting tendencies of the para substituents. Linear relationships were found between the 3-21G//STO-3G* amine nitrogen V_{min} and I_{min} and the σ_{p} Hammett const's. of the substituents; the correlation coeffs. were 0.99. Correlations of slightly lower quality were found between V_{min} , I_{min} , and σ_{m} , σ_{p} , and pKa. Es'ts. of previously unknown σ_{p} and pKa values were given. The presence of ring carbon Imin meta to the substituent also provides a predictive capability for determining σ_{m} values.

ACCESSION NUMBER: 1993:38219 CAPLUS
 DOCUMENT NUMBER: 118:38219
 TITLE: Calculated electrostatic potentials and local surface ionization energies of para-substituted anilines as measures of substituent effects
 AUTHOR(S): Heberlein, Markus; Murray, Jane S.; Brinck, Tore;
 CORPORATE SOURCE: Politzer, Peter
 SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
 USA
 CODEN: CJCHAG; ISSN: 0008-4042
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 373 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The rapid pyrolysis chem. of films of ammonium nitrate (AN), NH₄NO₃, and ammonium dinitramide (ADN), NH₄[N(NO₂)₂], at temps. approximating a burning surface is described by the use of T-jump/FTIR spectroscopy. The sequence of appearance and amts. of each gas product combined with the net endothermicity and exothermicity of the process at each time enables consistent reaction schemes to be developed. The decompn. of the condensed phase of AN is net endothermic up to at least 33 atm. Although dissociative sublimation and the formation of N₂O and H₂O dominate the overall process, the superposition of two addnl. reactions is needed to account for all of the products obtd. from AN. ADN becomes highly exothermic very early in the decompn. process. The superposition of two stoichiometric reaction branches explains this behavior. The spectra and thermal responses are consistent with the reaction of NH₃ with NO₂ being the major source of heat released during the decompn. of AN above 33 atm and ADN at 1 atm and higher.

ACCESSION NUMBER: 1993:62651 CAPLUS
 DOCUMENT NUMBER: 118:62651
 TITLE: Thermal decomposition of energetic materials. 58. Chemistry of ammonium nitrate and ammonium dinitramide
 AUTHOR(S): Brill, T. B.; Brush, P. J.; Patil, D. G.
 CORPORATE SOURCE: Dep. Chem., Univ. Delaware, Newark, DE, 19716, USA
 SOURCE: Combustion and Flame (1993), 92(1-2), 178-86
 DOCUMENT TYPE: CODEN: CBFMAQ; ISSN: 0010-2180
 LANGUAGE: Journal
 English

L4 ANSWER 375 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The basicity, reactivity, electron-binding energy and collision-induced dissociation of two novel nitro species, the dinitramide ion [N(NO₂)₂]⁻ and the nitroacetylide ion (O₂NCC_≡C⁻), have been exmd. using the tandem flowing afterglow-selected-ion flow tube. Dinitraminic acid is among the strongest known gas phase acids with $\Delta E_{\text{H-degree-acid}} = 110 \pm 30$ kcal mol⁻¹. The conjugate base, dinitramide anion, has a high electron binding energy, is extremely unreactive and is a very poor nucleophile. Collision-induced dissociation of dinitramide anion generates the O₂N⁻ anion. Nitroacetylide is a moderately strong acid with $\Delta E_{\text{H-degree-acid}} = 354 \pm 4$ kcal mol⁻¹; this value is similar to those of other nitro compds. and substituted acetylenes. The nitroacetylide ion is generally unreactive but exhibits a rich chem. upon reaction with hydrogen sulfide. The anion has a high electron binding energy and generates four ions upon collision-induced dissociation, ONC-, C₂⁻, C₂O⁻, and CN⁻.

ACCESSION NUMBER: 1993:21903 CAPLUS
 DOCUMENT NUMBER: 118:21903
 TITLE: Gas phase chemistry of dinitramide and nitroacetylide ions
 AUTHOR(S): Schmitt, Robert J.; Krempp, Michele; Bierbaum, Veronica M.
 CORPORATE SOURCE: Chem. Lab., SRI Int., Menlo Park, CA, 94025, USA
 SOURCE: International Journal of Mass Spectrometry and Ion Processes (1992), 117, 621-32
 DOCUMENT TYPE: CODEN: IJMPDN; ISSN: 0168-1176
 LANGUAGE: Journal
 English

L4 ANSWER 376 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A N,N-dinitramide salt having the formula MN(NO₂)₂ where M is a cation selected from the class consisting of a metal ion and a N-contg. ion is prep'd. for the high-temp. stable rocket fuels. It is prep'd. by reacting either (1) a dinitramine compd. formed from an aliph. isocyanate using NO₂BF₄ and HNO₃ in acetonitrile as the nitrating system or (2) a dinitraminic acid formed by nitratting a nitramide with NO₂BF₄ with a metal-contg. compd. or N-contg. compd. and a MX salt where X is selected from fluoride, chloride, hydroxyl, carbonate, alkoxide, or carboxyl anion.

ACCESSION NUMBER: 1992:217513 CAPLUS
 DOCUMENT NUMBER: 116:217513
 TITLE: Dinitramide salts and method of making same
 INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell, Paul
 E.: Ross, David S.
 PATENT ASSIGNEE(S): SRI International, USA
 SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIIXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9119669	A1	19911226	WO 1991-US4268	19910614
W: CA, JP RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
US 5254324	A	19931019	US 1990-540020	19900618
CA 2059654	AA	19911219	CA 1991-2059654	19910614
CA 2059654	C	19980616		
EP 487693	A1	19920603	EP 1991-911917	19910614
EP 487693	B1	19950118		
R: DE, FR, GB, IT, SE				
JP 05500795	T2	19930218	JP 1991-511276	19910614
JP 2519621	B2	19960731	US 1990-540020	19900618
PRIORITY APPLN. INFO.:			WO 1991-US4268	19910614

L4 ANSWER 377 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The title compds. having the formula MN(NO₂)₂ where M is a cation selected from the class consisting of a metal ion and a N-contg. ion are prep'd. by contacting a carbonare with a nitratting agent to form an intermediate HN(NO₂)₂ and neutralizing the intermediate with a compd. selected from NH₃, N2H4, a primary amine, a secondary amine, and a salt AX where A is a metal ion or a N-contg. ion and X is an anion selected from a fluoride, chloride, hydroxyl, carbonate, alkoxide, and carboxyl. The dinitramide salts prep'd. are useful as oxidizers in rocket fuels with high-temp. stability.

ACCESSION NUMBER: 1992:217512 CAPLUS
 DOCUMENT NUMBER: 116:217512
 TITLE: Manufacture of dinitramide salts for rocket propellants
 INVENTOR(S): Bottaro, Jeffrey C.; Schmitt, Robert J.; Penwell, Paul
 E.: Ross, David S.
 PATENT ASSIGNEE(S): SRI International, USA
 SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIIXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9119670	A1	19911226	WO 1991-US4277	19910614
W: CA, JP RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
US 5198204	A	19930330	US 1990-539647	19900618
CA 2064472	AA	19911219	CA 1991-2064472	19910614
EP 487690	A1	19920603	EP 1991-911719	19910614
R: DE, FR, GB, IT, SE				
JP 05500796	T2	19930218	JP 1991-511528	19910614
PRIORITY APPLN. INFO.:			US 1990-539647	19900618
			WO 1991-US4277	19910614

L4 ANSWER 378 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Ab initio SCF calcn. of the structures of N(NO₂)₂-I, HN(NO₂)₂ (II), and N(NO₂)₃ were carried out. Their stability in, the proton affinity of I as a measure of the acidity of II< and the interaction energy of I with NO₂⁺ to yield N(NO₂)₃ were computed. The proton affinity of I was greater than that of NO₂⁻.

ACCESSION NUMBER: 1992:113725 CAPLUS
 DOCUMENT NUMBER: 116:113725
 TITLE: Computational analyses of structural properties of the dinitramide ion, N(NO₂)₂(-), and some related molecules: dinitroamine and trinitroamine
 AUTHOR(S): Redfern, P. C.; Politzer, P.
 CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, USA
 SOURCE: Report (1990), Order No. AD-A228 139, 9 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1991, 91(9), Abstr. No. 121,792
 DOCUMENT TYPE: Report
 LANGUAGE: English

L4 ANSWER 379 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB An ab initio self-consistent-field Mo investigation of the rotational energy barriers of the N-NO₂ bonds in a series of aliph. and alicyclic nitramines has been carried out. Structures, energies, dipole moments, and electrostatic potentials of the ground and rotational transition states of these nitramines have been presented and compared, with the aim of exploring the dependence of the NO₂ rotational energy barrier upon structural and electronic features of these mols. For the mononitramines,

the rotational barrier is greater when the C-N(NO₂)-C portion of the ground-state mol. is planar (or nearly so) than when it is pyramidal. This can be viewed as a result of the amine lone pair being more highly delocalized in the former instance; more energy is then required to rotate

the NO₂ group and disrupt this higher degree of conjugation. Structural, electrostatic potential, and dipole moment data support this interpretation. Results for two dinitrohydrazines indicate that the second amine nitrogen and nitro group introduce significant new factors, including a suggested competitive conjugation.

ACCESSION NUMBER: 1991:582294 CAPLUS
 DOCUMENT NUMBER: 115:182294
 TITLE: Computational study of the nitrogen-nitro rotational energy barriers in some aliphatic and alicyclic nitramines
 AUTHOR(S): Habibollahzadeh, Dariush; Murray, Jane S.; Redfern, Paul C.; Politzer, Peter
 CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
 SOURCE: USA Journal of Physical Chemistry (1991), 95(20), 7702-9
 CODEN: JPCHAX; ISSN: 0022-3654
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 380 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The treatment of aliph. nitriles with O2NBF4/HNO3 in MeCN gave N,N-dinitroalkanamines. Thus, treatment of BunCO with O2NBF4/HNO3 in MeCN gave 35% N,N-dinitrobutanamine.
 ACCESSION NUMBER: 1991:558454 CAPLUS
 DOCUMENT NUMBER: 115:158454
 TITLE: A new synthesis of alkyl-N,N-dinitramines by direct nitration of isocyanates
 AUTHOR(S): Bottaro, Jeffrey C.; Penwell, Paul E.; Schmitt, Robert J.
 CORPORATE SOURCE: Org. Chem. Program, SRI Int., Menlo Park, CA, 94025, USA
 SOURCE: Synthetic Communications (1991), 21(7), 945-9
 CODEN: SYNCV; ISSN: 0039-7911
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 115:158454

L4 ANSWER 381 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The local ionization energies [.hivin.I(r)] have been computed on the mol. surfaces of the conjugate bases for four different groups of carbon and oxygen acids, using an ab initio self-consistent-field MO approach. The lowest surface .hivin.I(r) [IS,min] are generally found on the atom from which the proton has been abstracted. Good linear relationships between aq. acidities and .hivin.IS,min are found for the different groups. A single linear relationship between pKa and .hivin.IS,min that includes the four groups and three addnl. nitrogen acids also exists; the correlation coeff. is 0.97. This provides a means for predicting the pKa's of a large variety of carbon, oxygen, and nitrogen acids.
 ACCESSION NUMBER: 1991:491388 CAPLUS
 DOCUMENT NUMBER: 115:91388
 TITLE: Relationships between the aqueous acidities of some carbon, oxygen, and nitrogen acids and the calculated surface local ionization energies of their conjugate bases
 AUTHOR(S): Brinck, Tore; Murray, Jane S.; Politzer, Peter
 CORPORATE SOURCE: Dep. Chem., Univ. New Orleans, New Orleans, LA, 70148,
 SOURCE: Journal of Organic Chemistry (1991), 56(17), 5012-15
 CODEN: JOCEAH; ISSN: 0022-3263
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 382 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Carcinogenic nitrosamines are removed from melts or solns. of dinitroaniline herbicides (Markush given) by treatment with sulfo-contg. cation-exchange resins, at 90-130.degree.. A trifluralin melt (140.degree.), contg. 740 ppm dipropynitrosoamine was treated, at 100.degree., with 16 g sulfo-contg. cation-exchange resin. After 3 h, the dipropynitrosoamine content was decreased to 0.8 ppm.
 ACCESSION NUMBER: 1990:50604 CAPLUS
 DOCUMENT NUMBER: 112:50604
 TITLE: Removal of nitrosamine impurities from dinitroaniline herbicides
 INVENTOR(S): Barabas, Mihaly; Bacskai, Gyorgy; Boros, Peter; Fazekas, Andras; Mrs.: Halasz, Gyorgy; Mrs.: Lukacs, Lazlo; Magyar, Sandor; Ronkos, Ferenc; Elifert, Gyula; et al.
 PATENT ASSIGNEE(S): Budapest Vegyimuvek, Hung.
 SOURCE: Hung. Teljes, 13 pp.
 CODEN: HUXXBU
 DOCUMENT TYPE: Patent
 LANGUAGE: Hungarian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
HU 48203	A2	19890529	HU 1987-5314	19871126
HU 200988	B	19900928		

PRIORITY APPLN. INFO.: HU 1987-5314 19871126
 OTHER SOURCE(S): MARPAT 112:50604

L4 ANSWER 383 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Second processes in the thermal decomp. of Mn(NO₂)₂, involving the Mn.bul.NO₂ radical (I), were exampd. In the early stages of decompn., I undergoes unimol. decomp. to Mn: and NO₂, whereas in later stages of decompn. I reacts with NO₂ to form Mn(O.bul.)NO₂ and NO.
 ACCESSION NUMBER: 1989:496497 CAPLUS
 DOCUMENT NUMBER: 111:96497
 TITLE: Mechanism of the thermal decomposition of N,N-dinitromethylamine
 AUTHOR(S): Charskii, V. V.; Pavlov, A. N.; Nazin, G. M.; Korsunskii, B. L.; Fedorov, B. S.
 CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Chernogolovka, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1989), (4), 794-7
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 384 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The kinetics of thermal decomprn. of RN(NO₂)₂ (I; R = Me, Et, Pr, Bu) in the gas phase indicated the decomprn. involves homogeneous and unimol. dissoci., with N-NO₂ bond cleavage as the rate-limiting step. The activation parameters for I decomprn. indicated the N-NO₂ bond dissoci. energy in I is approx. 42 kJ/mol. lower than in the mono-NO₂ analogs.
 The identification of activation energy with N-NO₂ bond dissoci. energy permitted calcn. of heat of formation of the fragment radicals and related mols.
 ACCESSION NUMBER: 1989:496496 CAPLUS
 DOCUMENT NUMBER: 111:96496
 TITLE: Kinetics of thermal decomposition of N,N-dinitroalkylamines
 AUTHOR(S): Korsunskii, B. L.; Sitonina, G. V.; Fedorov, B. S.; Dubovitskii, F. I.; Eremenko, L. T.
 CORPORATE SOURCE: Inst. Khim. Fiz. im. Semenova, Moscow, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1989), (4), 790-3
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 385 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The heats of formation of a series of polyat. mols. contg. NO₂ and/or NF₂ groups were detd. by using the isodesmic procedure of J. A. Pople et al., (1970) at the SCF level. An excellent correlation between the semiempirical heats of formation and the corresponding available exptl. data is obstd. The NO₂ and NF₂ groups have large and comparable destabilizing effects.
 ACCESSION NUMBER: 1989:465155 CAPLUS
 DOCUMENT NUMBER: 111:65155
 TITLE: Heats of formation of some energetic compounds containing NO₂ and/or NF₂ groups
 AUTHOR(S): Leroy, G.; Sana, M.; Wilante, C.; Peeters, D.; Bourasseau, S.
 CORPORATE SOURCE: Lab. Chim. Quant., Louvain-la-Neuve, B-1348, Belg.
 SOURCE: THEOCHEM (1989), 56, 251-9
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 386 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The electronic structure and stabilization energy of radicals was discussed. Two types of radicals were identified: radicals centered on one atom and radicals in which the spin is delocalized on several atoms or bonds. The first type are strongly reactive. The second type undergo electronic reorganization during reactions which leads to transition barriers. For abstraction reactions and dimerization reactions of radicals, the transition barrier may be expressed as a linear combination of bond energies of formation and cleavage. The results indicated that for dehydromerization (abstraction + dimerization), it is necessary that RH have a weak RH bond, and that the product RR have a strong central bond.
 ACCESSION NUMBER: 1989:172609 CAPLUS
 DOCUMENT NUMBER: 110:172609
 TITLE: Theoretical study of dehydromerization reactions
 AUTHOR(S): Sana, M.; Leroy, G.
 CORPORATE SOURCE: Lab. Chim. Quantique, Louvain-la-Neuve, B-1348, Belg.
 SOURCE: Annales de la Societe Scientifique de Bruxelles, Serie Physiques 1: Sciences Mathematiques, Astronomiques et (1988), Volume Date 1987, 101(1-2), 23-57
 CODEN: ASSEAH; ISSN: 0037-959X
 DOCUMENT TYPE: Journal
 LANGUAGE: French

L4 ANSWER 387 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The N-centered radicals carrying two electron-donor substituents are persistent or stable due to their large thermodyn. stabilization energy. On the other hand, amyl radicals carrying both an electron-donor and an electron-acceptor substituent (the so-called push-pull amyl radicals) may exhibit, even in the gas phase, an appreciable thermodyn. stabilization quant. measured by their extra- or merostabilization energy. They are also kinetically stabilized, essentially because of the destabilization of their dimer. Finally N-centered radicals carrying two electron-acceptor substituents are largely destabilized. They are either transient or persistent depending on how much their dimer is destabilized.
 ACCESSION NUMBER: 1988:173872 CAPLUS
 DOCUMENT NUMBER: 108:173872
 TITLE: A theoretical investigation of the structure and reactivity of nitrogen-centred radicals
 AUTHOR(S): Leroy, Georges; Sana, Michel; Wilante, Claude; Peeters, Daniel; Dogimont, Charles
 CORPORATE SOURCE: Lab. Chim. Quant., Univ. Cathol. Louvain, Louvain-la-Neuve, B-1348, Belg.
 SOURCE: THEOCHEM (1987), 38(3-4), 249-67
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L4 ANSWER 388 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The following thermochem. values (in kJ/mol) were detd. for MeN(NO₂)₂: heat of combustion, -823.8; heat of formation (liq.), 1.5; heat of formation (gas), 53.5; N-N bond energy, 118.4. A heat of formation of 137.7 kJ/mol was found for the MeNO₂ radical.
ACCESSION NUMBER: 1988:111708 CAPLUS
DOCUMENT NUMBER: 108:111708
TITLE: Thermochemistry of methylidinitramine and the enthalpy of formation of the methylnitramine radical
AUTHOR(S): Miroshnichenko, E. A.; Korchatova, L. I.; Korsunskii, B. L.; Fedorov, B. S.; Orlov, Yu. D.; Eremenko, L.
T.: Lebedev, Yu. A.; Dubovitskii, F. I.
CORPORATE SOURCE: Inst. Khim. Fiz., Moscow, USSR
SOURCE: Doklady Akademii Nauk SSSR (1987), 295(2), 419-23
(Phys. Chem.)
CODEN: DANKAS; ISSN: 0002-3264
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 389 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The following quantities were calcd. for several nitramines: the orbital energy (.epsilon₁) of the unshared electrons on the amine N, the electron d. of this orbital, its s character, and its diam. For MeN(NO₂)CH₂CH₂ and O₂NNHCH₂R (R = NHNO₂, ORC), the effect of conformation on .epsilon₁ was calcd.
ACCESSION NUMBER: 1987:101470 CAPLUS
DOCUMENT NUMBER: 106:101470
TITLE: Characteristics of the lone-pair electron orbital on the amine nitrogen atom in N-nitro compounds and its interactions with unoccupied frontier orbitals of substituents using localized NO terms
AUTHOR(S): Ivshin, V. P.; Yashukova, O. A.; Shlyapochnikov, V.
A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1986), (6), 1295-8
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 390 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The ¹⁵N chem. shifts of polysubstituted amines was linearly correlated with the sum of ¹⁵N chem. shifts of monosubstituted N compds. The predominant factor was the electronegativity of the substituents.
ACCESSION NUMBER: 1985:614654 CAPLUS
DOCUMENT NUMBER: 103:214654
TITLE: Nitrogen-15 NMR study of the nitrogen atoms in polyfunctional compounds
AUTHOR(S): Dorie, J.; Gouesnard, J. P.
CORPORATE SOURCE: Lab. Chim. Org. Phys., CNRS, Nantes, 44072, Fr.
SOURCE: Journal de Chimie Physique et de Physico-Chimie Biologique (1985), 82(4), 369-72
CODEN: JCPBAN; ISSN: 0021-7689
DOCUMENT TYPE: Journal
LANGUAGE: French

L4 ANSWER 391 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Kinetic data for the decompr. of MeN(NO₂)₂ (I) in 46.1-78.2% H₂SO₄ indicated a 2-step mechanism. In the 1st step I was decompr. to MeNHNO₂, which was decompr. in the 2nd step to MeOH and N₂O.
ACCESSION NUMBER: 1983:452907 CAPLUS
DOCUMENT NUMBER: 99:52907
TITLE: Kinetics and mechanism of the acid-catalyzed decomposition of methylidinitroamine
AUTHOR(S): Glukhov, A. A.; Kuznetsov, L. L.; Gidaspov, B. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Organicheskoi Khimii (1983), 19(4), 704-7
CODEN: ZORKAE; ISSN: 0514-7492
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 392 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Nitration of $(RNX)CH_2$ (I; R = Me, R₂ = CH₂CH₂; X = Ac) with NO₂+BF₄⁻ gave mixts. of the corresponding RN₂CH₂XIR (II; X₁ = NO₂) and I (same R, X = NO₂). An analogous reaction of I (R = Me; X = CO₂Me, MeSO₂) gave Me₂NNO₂ (III; same X), and I (R = Me, X = p-tosyl) gave mixts. of the the corresponding II and III, along with [(O₂N)₂N]₂CH₂. MeSO₂NRCH₂NMeNO₂ (R = Me, CHMe₂) gave the corresponding MeSO₂NRNO₂ and I (R = Me, X = NO₂) under these conditions, and RSO₂NRICH₂R₂ (R = Me, Ph, p-tolyl; R₁ = H, Me; R₂ = morpholino) gave N-nitromorpholine as the major product.

ACCESSION NUMBER: 1982:84999 CAPLUS
DOCUMENT NUMBER: 96:84999
TITLE: Nitration of acylated methylenediamine derivatives
AUTHOR(S): Luk'yanov, O. A.; Mel'nikova, T. G.; Tartakovskii, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1981), (10), 2335-9
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 393 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB NO₂+BF₄⁻ (I) nitrated MeSO₂Rac (R = Me, Et, CHMe₂, AcNMeCO₂Me and MeSO₂NMeCO₂Me in 1:1 ratio in MeCN at -25 to +20.degree. to give 71-83% nitration of p-MeC₆H₄SO₂NMeAc gave 24% p-MeC₆H₄SO₂NMeNO₂ and 37% 4,X-Me(O₂N)C₆H₃NMeNO₂, and p-MeC₆H₄SO₂NNMeCO₂Me (II) gave 45 and 68% 4,X-Me(O₂N)C₆H₃NMeCO₂Me using 1:1 and 2:1 I-I, resp. Similarly, nitration of N-methylphthalimide and MeNac₂ with I in 1:1 and 2:1 ratio gave 36 and 75% N-methylphthalimide and 26% AcNMeNO₂ and 15% MeN(NO₂)₂ (III) and 75% III, resp. However, N-methylsuccinimide and MeH(SO₂Me)₂ were inert under these conditions. Therefore, the reactivity of the acidic residues decreased in the order of Ac > MeSO₂ .mchgt. 4,x-Me(O₂N)C₆H₃SO₂CO₂Me.

ACCESSION NUMBER: 1982:34461 CAPLUS
DOCUMENT NUMBER: 96:34461
TITLE: Nitration of N-alkylimides
AUTHOR(S): Luk'yanov, O. A.; Mel'nikova, T. G.; Kriger, L. N.; Tartakovskii, V. A.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1981), (9), 2138-41
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 394 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The ¹⁵N and ¹³C NMR spectra were recorded of a no. of ¹⁵N-enriched cyclic and acyclic secondary N-nitroamines. The results are discussed in terms of both electronegativity effects and conformational factors.
ACCESSION NUMBER: 1981:496408 CAPLUS
DOCUMENT NUMBER: 95:96408
TITLE: Application of carbon-13 and nitrogen-15 NMR spectroscopy to structural studies on nitramines
AUTHOR(S): Bulusu, Suryanarayana; Axenrod, Theodore; Autera, Joseph R.
CORPORATE SOURCE: Energ. Mater. Div., Large Caliber Weapon Syst. Lab., Dover, NJ, 07801, USA
SOURCE: Organic Magnetic Resonance (1981), 16(1), 52-6
CODEN: ORMRBD; ISSN: 0030-4921
DOCUMENT TYPE: Journal
LANGUAGE: English

L4 ANSWER 395 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The following relation was found between the rate const. (k) for electron transfer from amines to MeN(NO₂)₂ and the half-wave potentials (E) for oxidn. of the amines at a rotating Pt disk electrode in MeCN: log k = 2.7 - 5.3E. The amines used were R₂NH (R = Me₂CH, Et, Me₂CHCH₂, Bu), piperidine, and pyrrolidine; E decreased in this order.
ACCESSION NUMBER: 1981:423910 CAPLUS
DOCUMENT NUMBER: 95:23910
TITLE: Relation between reaction rates of dialkylamines with methyl-N,N-dinitroamine and semiwave potentials of amine oxidation on a rotating disk electrode
AUTHOR(S): Shcherbinin, M. B.; Bedin, M. P.; Bazanov, A. G.; Taelinskii, I. V.
CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
SOURCE: Zhurnal Obshchei Khimii (1981), 51(3), 709-10
CODEN: ZOKHA4; ISSN: 0044-460X
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 396 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The reaction of MeN(NO₂)₂ with piperidine to give the piperidinium salt of MeN:NO₂⁻ and 1-nitropiperidine followed the Kirkwood relation in aprotic solvents. This result and the dipole moments of the reactants were used to calc. a dipole moment of 8.8 D and a degree of charge sepn. of 0.43 for the activated complex. The low rates in hydroxylic solvents were attributed to reactant solvation.
 ACCESSION NUMBER: 1980:549624 CAPLUS
 DOCUMENT NUMBER: 93:149624
 TITLE: Effect of a solvent on the reaction rate of methyl-N,N-dinitroamine with piperidine
 AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.; Mikheeva, L. I.
 CORPORATE SOURCE: USSR
 SOURCE: Zhurnal Organicheskoi Khimii (1980), 16(6), 1123-6
 CODEN: ZORKAE; ISSN: 0514-7492
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 397 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The reaction of MeN(NO₂)₂ with dialkylamines, morpholine, piperidine, piperazine, and pyrrolidine to give ammonium salts of MeN:NO₂⁻ and N-nitro amines was 1st order in each reactant. Activation enthalpies and entropies were detd., and an iso kinetic temp. of 388 .+-. 19 K was obtained. LFER treatments yielded low rho values (0.99-1.60), indicating a transition state of low polarity.
 ACCESSION NUMBER: 1980:549476 CAPLUS
 DOCUMENT NUMBER: 93:149476
 TITLE: Effect of the structure of dialkylamines on the kinetics of their reaction with methyl-N,N-dinitroamine
 AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.; Dudarev, A. S.
 CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
 SOURCE: Zhurnal Organicheskoi Khimii (1980), 16(6), 118-23
 CODEN: ZORKAE; ISSN: 0514-7492
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 398 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The reaction of MeN(NO₂)₂ (I) with EtNO₂ (II) and KOH to give KNMeNO₂ and KCMe(NO₂)₂ was 2nd order in I and 1st order in the anion of II. The effects of initiators and inhibitors of radical processes indicated that a radical-anion chain mechanism was involved.
 ACCESSION NUMBER: 1980:128098 CAPLUS
 DOCUMENT NUMBER: 92:128098
 TITLE: Mechanism of the reaction of methyl-N,N-dinitroamine with nitrocarbanions
 AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.
 CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
 SOURCE: Kinetika i Kataliz (1979), 20(6), 1597-8
 CODEN: KNKTA4; ISSN: 0453-8811
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 399 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB R4N⁺ OH⁻ (R = Me, Et) reacted with R1NHNO₂ (R1 = C₁-C₅ n-alkyl) at 0.degree. in corresponding ROH to give 77.4-94.1% R4N⁺-NR1NO₂, which was nitrated with FNO₂ in MeOH at -30 to -25.degree. to give 54.4-70.1% R1N(NO₂)₂ (I); R1 = C₂-C₅ n-alkyl. The bulky cations promoted N-nitration by FNO₂ by O-nitration by NO₂⁺ BF₄⁻. The refractive indexes of I increased with the size of the R1 and decrease linearly with their d.
 ACCESSION NUMBER: 1980:93827 CAPLUS
 DOCUMENT NUMBER: 92:93827
 TITLE: N-Nitration of primary nitramines with nitryl fluoride
 AUTHOR(S): Gafurov, R. G.; Fedorov, B. S.; Eremenko, L. T.
 CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1979), (10), 2289-92
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 400 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB To det. the reactivity of the methyl-N,N-dinitroamine (I) (25346-05-8) as an electron acceptor, its electrochem. redn. was studied on a dropping Hg electrode in 65% aq. 2-propanol with nitrate ions in the supporting electrolyte. During redn. in acid buffered soln. (0.1N HNO₃ + 0.1N NH₄NO₃), I gives 2 irreversible diffusion waves: 2-electron with E_{1/2} = -0.04 V (vs. SCE) and 6-electron (E_{1/2} = -2.6 V).
 ACCESSION NUMBER: 1979:446367 CAPLUS
 DOCUMENT NUMBER: 91:46367
 TITLE: Polarographic study of methyl-N,N-dinitroamine
 AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Zaitsev, A. G.; Tselinskii, I. V.
 CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
 SOURCE: Zhurnal Obshchey Khimii (1979), 49(5), 1173
 CODEN: ZOKHA4; ISSN: 0044-460X
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 401 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A CIDNP study of the title reaction suggested a mechanism involving electron transfer from Me₂NH to Me(NO₂)₂.
 ACCESSION NUMBER: 1979:419451 CAPLUS
 DOCUMENT NUMBER: 91:19451
 TITLE: Chemical polarization of nuclei in the reaction of methyl-N,N-dinitroamine with dimethylamine
 AUTHOR(S): Shcherbinin, M. B.; Bazanov, A. G.; Tselinskii, I. V.; Gidaspov, B. V.
 CORPORATE SOURCE: Leningr. Tekhnol. Inst., Leningrad, USSR
 SOURCE: Zhurnal Organicheskoi Khimii (1979), 15(4), 680-3
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 402 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Nitrolysis of RCONR'NO₂ (R = Me, R' = Me, Et, Pr, Bu; R₁ = Me, R = Pr, Me₂CH, Bu, Me₂CH₂, Me₃C) was carried out in org. solvents to give (RCO)₂BF₄⁻ and RIN(NO₂)₂.
 ACCESSION NUMBER: 1979:103356 CAPLUS
 DOCUMENT NUMBER: 90:103356
 TITLE: N-nitration of amides. III. Nitrolysis of N-nitro-N-alkyl amides of monobasic aliphatic carboxylic acids by nitronium tetrafluoroborate
 AUTHOR(S): Andreev, S. A.; Lebedev, B. A.; Koldobskii, G. I.; Tselinskii, I. V.; Gidaspov, B. V.
 CORPORATE SOURCE: USSR
 SOURCE: Zhurnal Organicheskoi Khimii (1978), 14(5), 907-9
 CODEN: ZOKRAE; ISSN: 0514-7492
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 403 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Treating RCONH₂ (R = Me, Cl₃C, Pr, Me₂CH₂; R₁ = Me, Bu) with NO₂⁺ BF₄⁻ in an org. solvent afforded the corresponding RINHNO₂ and RCO₂BF₄⁻, which underwent acid-catalyzed cleavage under the reaction conditions.
 ACCESSION NUMBER: 1978:507941 CAPLUS
 DOCUMENT NUMBER: 89:107941
 TITLE: N-nitration of amides. IV. Nitrolysis of N-alkylamides of aliphatic carboxylic acids by nitronium tetrafluoroborate in a medium of organic solvents
 AUTHOR(S): Andreev, S. A.; Lebedev, B. A.; Tselinskii, I. V.
 CORPORATE SOURCE: USSR
 SOURCE: Zhurnal Organicheskoi Khimii (1978), 14(5), 909-12
 CODEN: ZOKRAE; ISSN: 0514-7492
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 404 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Treatment of ($\text{Me}(\text{NO}_2)$) $_2$ -X $^+$ (X = K $^+$, NH4 $^+$, Et4N $^+$) with FNO2 in MeCN gave (cation, t yield MeONO2, and t yield MeN(NO2)2 given): K, 65.6, O; NH4, 48.2, 17.1; Me4N, 6.0, 59.3; Et4N, 0, 72.3.
 ACCESSION NUMBER: 1978:442297 CAPLUS
 DOCUMENT NUMBER: 88:42297
 TITLE: Effect of cations on the direction of the reaction of primary nitramine salts with nitryl fluoride
 AUTHOR(S): Gafurov, R. G.; Fedorov, B. S.; Eremenko, L. T.
 CORPORATE SOURCE: Inst. Khim. Fiz., Chernogolovka, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1978), (3), 734
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 405 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The 1H, 13C and 15N NMR spectra of O2NNR1 (R = H, Me, Me3Si; R1 = Me, CO2Me, CO2Et, NO2), R2:N(O)OR3 (R2 = Me, CO2Me, CO2Et; R3 = Me, Me3Si, Me2CH) and some related compds. were discussed.
 ACCESSION NUMBER: 1978:135833 CAPLUS
 DOCUMENT NUMBER: 88:135833
 TITLE: Use of nitrogen-15 spin-spin coupling constants for the structural analysis of derivatives of nitramines and N-nitrourethanes
 AUTHOR(S): Ioffe, S. L.; Blyumenfel'd, A. L.; Shashkov, A. S.
 CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1978), (1), 246-51
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 406 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Oxidative dimerization of R2CHNO2 (R2 = Me2, (CH2)4, (CH2)5) with MeN(NO2)2 (I) at 45-65.degree. in MeOH contg. NaOH yielded 32-48% O2NCR2CR2NO2. I nitrated R1CH2NO2 (R1 = H, Me, Et, HOCH2) at 0-20.degree. in MeOH contg. KOH to give 34-55% R1C(NO2)2K. PrNH2, Et2NH and morpholine were converted to the corresponding nitramines in 54-70% yield with I in THF at 0-20.degree..
 ACCESSION NUMBER: 1978:61918 CAPLUS
 DOCUMENT NUMBER: 88:61918
 TITLE: gem-Dinitramines - new nitrating agents
 AUTHOR(S): Luk'y'yanov, O. A.; Shlykova, N. I.; Gorelik, V. P.; Tartakovskii, V. A.
 CORPORATE SOURCE: Inst. Org. Khim., Moscow, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1977), (10), 2384
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 407 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB Dipole moments, st. charges and heats of atomization of N2H4, H2NNO2 and several of their derivs. were calcd. by the CNDO/2 method. The enthalpies of N-N bonds are lower than those of C-N bonds. The magnitudes of the charges on the atoms of the NO2 group in N-NO2 compds. exceed those in C-NO2 compds.
 ACCESSION NUMBER: 1978:37088 CAPLUS
 DOCUMENT NUMBER: 88:37088
 TITLE: Electron structure of hydrazines and nitramines
 AUTHOR(S): Belik, A. V.; Bakeeva, S. K.; Shlyapochnikov, V. A.
 CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1977), (11), 2608-10
 CODEN: IASKA6; ISSN: 0002-3353
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L4 ANSWER 408 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB Bond lengths, bond angles, and rotational angles were detd. for MeN(NO₂)₂ by electron diffraction. The C-N bond is 42.2.degree. out of the plane of the 3 N atoms.
ACCESSION NUMBER: 1978:22044 CAPLUS
DOCUMENT NUMBER: 88:22044
TITLE: Electron-diffraction structure study of methylidinitramine molecule
AUTHOR(S): Tarasenko, N. A.; Vilkov, L. V.; Slepnev, G. E.; Pankrushev, Yu. A.
CORPORATE SOURCE: Inst. Neftekhim. Sint., Moscow, USSR
SOURCE: Zhurnal Strukturnoi Khimii (1977), 18(5), 953-4
CODEN: ZSTKAI; ISSN: 0136-7463
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 409 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The additive method of interat. interactions can be used for conformational anal. of nitramines only if internal rotation is taken into account. As the angle between the CNC and NNO₂ planes in Me₂NNO₂ varied from 0 to 20 to 40.degree., the energy of nonbonded interactions varied from 69.39 to 61.45 to 73.26 kcal/mol. H₂NNO₂, MeHNNO₂, and MeN(NO₂)₂ were also exmd.
ACCESSION NUMBER: 1977:517485 CAPLUS
DOCUMENT NUMBER: 87:117485
TITLE: Molecular structure of nitramines and the role of nonvalent interactions
AUTHOR(S): Tarasenko, N. A.; Slepnev, G. E.; Avakyan, V. G.; Vilkov, L. V.
CORPORATE SOURCE: Khim. Fak., Mosk. Gos. Univ., Moscow, USSR
SOURCE: Deposited Doc. (1975), VINITI 2322-75, 20 pp.
Avail.:
DOCUMENT TYPE: Report
LANGUAGE: Russian

L4 ANSWER 410 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB An electron-diffraction study of Me₂NNO₂ (I; R = H, Cl, NO₂) showed that the N-N bond length increased in the stated order of R. In I (R = H) the NO₂ group was rotated 28.degree. out of the CNN plane. In I (R = NO₂) the min. distance between O atoms of different NO₂ groups was 2.20 .ANG..
ACCESSION NUMBER: 1977:484438 CAPLUS
DOCUMENT NUMBER: 87:84438
TITLE: Structure of nitramines in the gas phase
AUTHOR(S): Slepnev, G. E.; Tarasenko, N. A.; Sadova, N. I.; Vilkov, L. V.
CORPORATE SOURCE: Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR
SOURCE: Tezisy Dokl. - Vses. Soveshch. Org. Kristallokhim., Iss. (1975), Meeting Date 1974, 62-3. Editor(s): Struchkov, Yu. T.; Bleidelis, Ya. Ya. "Zinatne": Riga, USSR.
CODEN: 35XAN
DOCUMENT TYPE: Conference
LANGUAGE: Russian

L4 ANSWER 411 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
AB The angles of deviation from planarity were calcd. for NO₂NH₂, NO₂NNMe₂, and (NO₂)₂NNMe by the semi-empirical CNDO method of Boyd and Whitehead (R.T.B. and M.A.W., 1972). The barrier to the rotation around the N-N bond for NO₂NH₂ is 2.5 and for NO₂NNMe₂ is 8 kcal/mole. The barrier to inversion of NO₂NNH₂ is 6.5 and of (NO₂)₂NNMe is 3.5 kcal/mole. The most stable configuration of the (NO₂)₂NNMe mol. has the rotation angle of the both NO₂ group equal 45-50.degree..
ACCESSION NUMBER: 1974:441608 CAPLUS
DOCUMENT NUMBER: 81:41608
TITLE: Quantum-chemical determination of the geometric configuration of nitramide, dimethylnitroamine, and dinitromethylamine
AUTHOR(S): Burstein, K. Ya.; Fundyler, I. N.
CORPORATE SOURCE: Inst. Org. Khim. im. Zelinskogo, Moscow, USSR
SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1974), (4), 892-4
CODEN: IASKA6; ISSN: 0002-3353
DOCUMENT TYPE: Journal
LANGUAGE: Russian

L4 ANSWER 412 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB A high-purity N, O, and F compd. was prep'd. by causing F to react with NO₂ (ratio NO₂:F₂ = 2:1) adsorbed on a Al or Ni surface at -30.degree., previously activated by N, O, and F compds. The final white solid compd. with a vapor pressure of 3-6 torr had the formula ONOF, based on its mol. wt. (Regnault method), ir strong bands 1713, 1302, and 885 cm⁻¹, and isomerization to FNO₂. By using similar conditions and process but changing the ratio NO₂:F₂, two other compounds were obtained possibly NO₃F₃ (ir bands 1761, 1294, 927, and 804 cm⁻¹) and ONOF(NO₂)₂, (ir bands 1720 and 1240 cm⁻¹).
 ACCESSION NUMBER: 1971:150605 CAPLUS
 DOCUMENT NUMBER: 74:150605
 TITLE: Nitrogen, oxygen, and fluorine compounds
 AUTHOR(S): Bruna, P. J.; Jubert, A. H.; Sicre, Juan E.; Schumacher, Hans J.
 CORPORATE SOURCE: Fac. Cienc. Exactas, Univ. Nacl. La Plata, La Plata, Argent.
 SOURCE: Anales de la Sociedad Cientifica Argentina (1970), 190(1-2), 39-50
 CODEN: ASCRAZ; ISSN: 0037-8437
 DOCUMENT TYPE: Journal
 LANGUAGE: Spanish

L4 ANSWER 413 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The title compds. are prep'd. by treating monoalkylurea or its nitrate with HNO₃ and Ac₂O at <5.degree.. Thus, 20 g. monomethylurea-HNO₃ was added to a mixt. of 120 g. HNO₃ (sp. gr. 1.52) and 100 g. Ac₂O with stirring at -5.degree.. After 10 min. stirring, the reaction mixt. was poured into 1 l. ice water and extd. with 200 ml. ether. The ethereal ext. was washed with H₂O, 5% Na₂CO₃, and H₂O, and distd. in vacuo to remove the ether. The residual soln. was dried with CaCl₂ and distd. to give 6 g. methylidinitroamine, d₂₀ 1.4267, n_D²⁰ 1.4472, etc. = 1.42 cp. (20.degree.), vapor pressure = 7 mm. Hg (20.degree.).
 ACCESSION NUMBER: 1969:490792 CAPLUS
 DOCUMENT NUMBER: 71:90792
 TITLE: Alkyldinitroamines
 INVENTOR(S): Shiino, Kazuo
 PATENT ASSIGNEE(S): Japan, Bureau of Industrial Technology
 SOURCE: Jpn. Tokkyo Koho, 2 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 44007687	B4	19690411	JP	19640617

L4 ANSWER 414 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB N,N-Dinitramines are prep'd. by reacting a nongaseous, highly conductive ionic nitronium salt with a primary org. nitramine or its salt. The use of ionic nitrating agents (e.g. nitronium tetrafluoroborate) is essential in contrast to conventional nitrating agents (e.g. HNO₃ etc), which do not yield N,N-dinitramines upon treatment of primary nitramines. Thus, 10.0 g. BuN(HNO₂) (I) in 75 ml. MeCN at -30.degree. is treated with 11.4 g. NO₂BF₄ with vigorous stirring. The reaction mixt. was allowed to come to 0.degree. before being quenched in 400 ml. ice-H₂O. The sepd. viscous yellow oil was taken up in CH₂C₂ and the resulting soln. was washed with cold, 4N NaOH and then with 4 80-ml. portions of H₂O, dried, and distd. to yield 50% BuN(NO₂)₂ (II), b₀.02 27-8.degree.. II was similarly prep'd. in 98% yield from the NH₄ salt of I. Similarly prep'd. were N,N,N',N'-tetranitroethylenediamine (40% yield), N,N-dinitro-1-methylhexylamine, N,N,N',N'-tetranitro-3-nitro-1,5-diaminopentane (m. 71-2.degree., (decomp.), N,N-dinitro-2-nitroso-ethylenediamine, N,N,N',N'-tetranitro-2-nitro-1,3-diaminopropane, N,N-dinitro-3-chloropropylamine, and N,N,N',N'-tetranitrophenylenediamine.
 ACCESSION NUMBER: 1969:67584 CAPLUS
 DOCUMENT NUMBER: 70:67584
 TITLE: N,N-Dinitramines useful in propellant, explosive, and pyrotechnic compositions
 PATENT ASSIGNEE(S): Aerojet-General Corp.
 SOURCE: Brit., 6 pp.
 CODEN: BRXXAA
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1126591		19680905		
US 3428667		19690000	US	19620920

PRIORITY APPLN. INFO.: US

L4 ANSWER 415 OF 415 CAPLUS COPYRIGHT 2003 ACS on STN
 AB The title compd. (I), which may be useful as an explosive or propellant, was prep'd. by the reaction of hydrazine with acrylonitrile giving unsym. and sym. disubstituted hydrazine mixts. which are nitrated and hydrolyzed. The reaction of hydrazine with acrylonitrile in a 1:2 molar ratio gave the sym. and unsym. disubstituted derivs., (NCCH₂CH₂NH)₂ and (NCCH₂CH₂)₂NNH₂ (II). The corresponding mono-, tri-, and tetrasubstituted hydrazines were not detected. To the product mixt. was added p-nitrobenzaldehyde in glacial HOAc and the weight of the hydrazone detd. Furthermore, II was analyzed as the acetone hydrazone by ir spectroscopy. The spectrophotometric results agreed with those obtained by gravimetric anal. Both showed the II content of the mixt. was 45%. Nitration of the mixt. in HNO₃-HOAc-Ac₂O in the presence of Cl- as catalyst was successful. Hydrolysis of the nitrated nitrile with concd. HCl gave I.
 ACCESSION NUMBER: 1968:12442 CAPLUS
 DOCUMENT NUMBER: 68:12442
 TITLE: Synthesis of 3,4-dinitro-3,4-diazahexane-1,6-dicarboxylic acid
 AUTHOR(S): Iizuka, Satsuki; Nambo, Keiho
 CORPORATE SOURCE: Univ. Tokyo, Tokyo, Japan
 SOURCE: Kogyo Keyaku Kyokaishi (1966), 27(3), 153-7
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

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